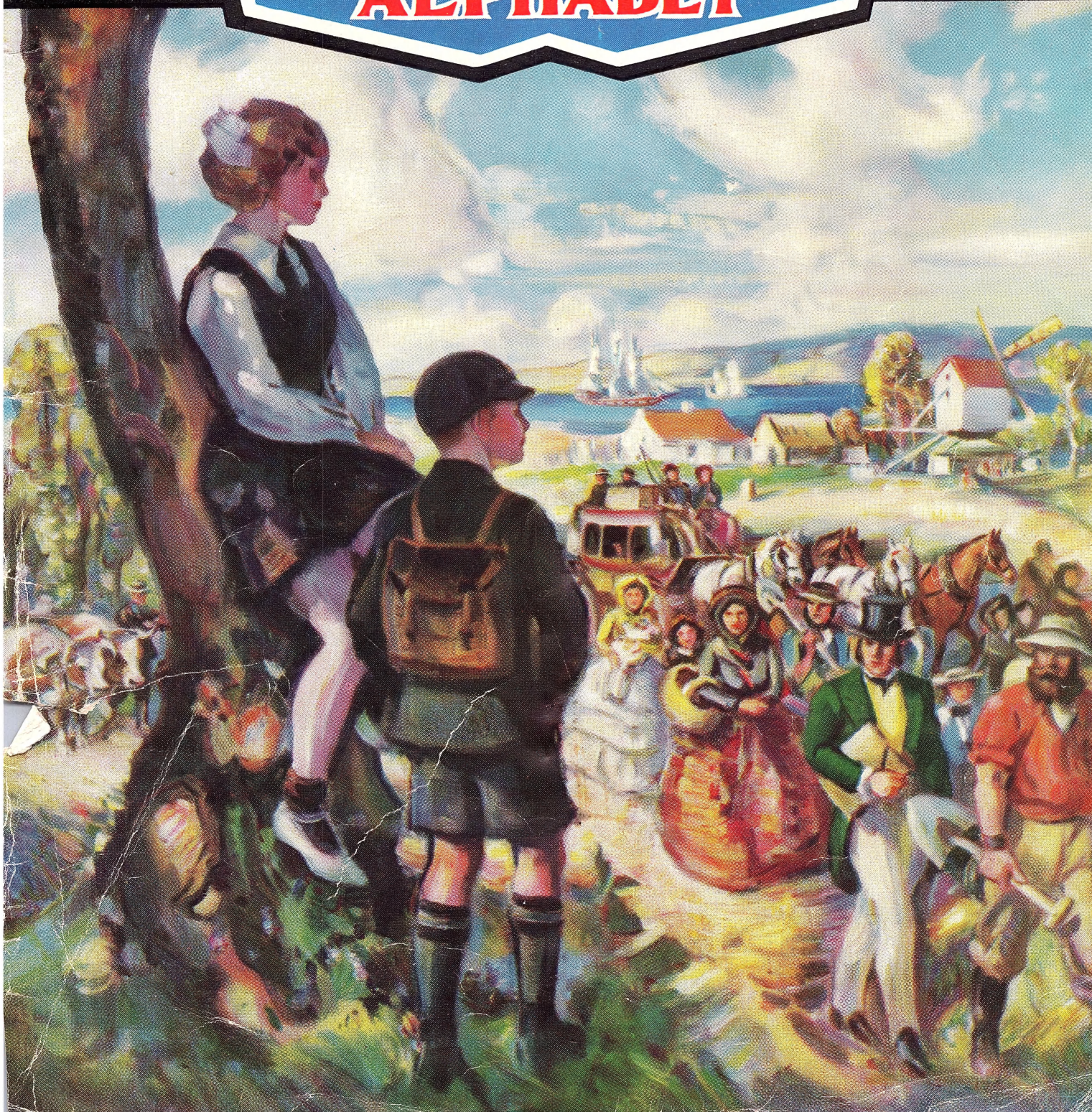


1954
EDITION

The **NEW ZEALAND TRADES ALPHABET**

WORLD
COPY-
RIGHT



*Whatever you write
Take care of each letter
When you write WITH A BIRO
You write so much better*



Biro... the most efficient writing instrument
the world has ever known...

Writing through the Ages



Primitive man used this instrument, the Graver, to scratch pictures on bone and clay surfaces.

The Ancient Babylonians and Assyrians used brick-like tablets of clay, and 'wrote' with a pointed tool, the Stylus.



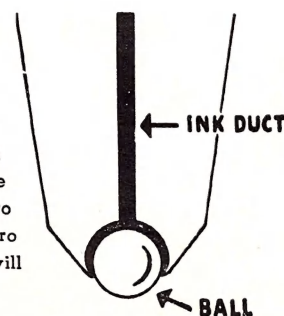
About the 6th Century appeared the Quill, made from the wing feathers of birds.

Metal pens have been found in Pompeii ruins; but the steel pen was not in general use until the 19th Century.



How your Biro Pen Writes

Mankind's efforts to find better ways of writing culminated in Biro. Biro has no point to break or cross. Biro uses a revolving ball to transfer the ink to the paper. That is why Biro writes so smoothly. Biro ink dries as it writes, will not blot nor smudge.



How Capillary Action Controls the Flow of Ink in Your Biro



The ink in your Biro is stored in a tube attached to the point. Capillary forces maintain a continuous vein of ink to the ballpoint and prevent any leakage of ink from the open end of the reservoir.

A Product of Fine Precision Engineering

Your Biro Pen is manufactured to very fine limits of accuracy! For instance, the ball in the point is micron-adjusted. Meticulous care in manufacture and assembly is one reason why your Biro gives you such long, trouble-free service.



THE BRITISH BALLPOINT PEN

Biro

WITH THE WORLD WIDE SERVICE

How to look after your Biro

Keep the ballpoint clean by wiping with a damp cloth. Keep air vents clean by pricking with pin. Do NOT apply heat or you may damage your pen.

FREE! For further information to assist you with your essay and project entry, write to:
Biro, Box 931, Wellington.

THE NEW ZEALAND TRADES ALPHABET 1954

(Copyright throughout the British
Empire)

250,000 Copies Printed

Established in New Zealand in 1913 by
ROBERT WESTFIELD.

Address:

214 Nathan's Building,
Grey Street, Wellington, N.Z.
P.O. Box 2374. Telephone 45-445.

Printed by New Zealand Newspapers Ltd.,
Shortland Street, Auckland.

Delivered to the Schools by
Truth (N.Z.) Ltd.,
Wakefield Street, Wellington.

250,000 copies of this edition of
THE NEW ZEALAND TRADES ALPHABET
are being distributed to the schools in
the ten Educational Districts of New
Zealand, and 850,000 copies of the
1954 Australian edition were distrib-
uted to the schools throughout Aus-
tralia.

In Canada in 1953, 900,000 copies
in English, and 350,000 in French,
were distributed to the schools
throughout the provinces in the
Dominion of Canada. Also, the first
edition for Great Britain appeared in
1953, one million copies being printed.

The Association of New Zealand
Advertisers checks the printing and
distribution of the ALPHABET, as well
as the applications from the schools,
and then issues the Circulation Cer-
tificate.

THE NEW ZEALAND TRADES ALPHABET
is given free to school children to
educate them in the achievements of
New Zealand industry, both primary
and secondary.

The ALPHABETS are sent only to those
schools whose headmasters have sent
in one of our application forms duly
signed.

SUPPLY OF ALPHABETS

When you receive your copies of
this edition of the Alphabet, please
inform us immediately if you will
require extra copies of next year's
edition to meet your needs. Please
state the total number required.

Foreword...

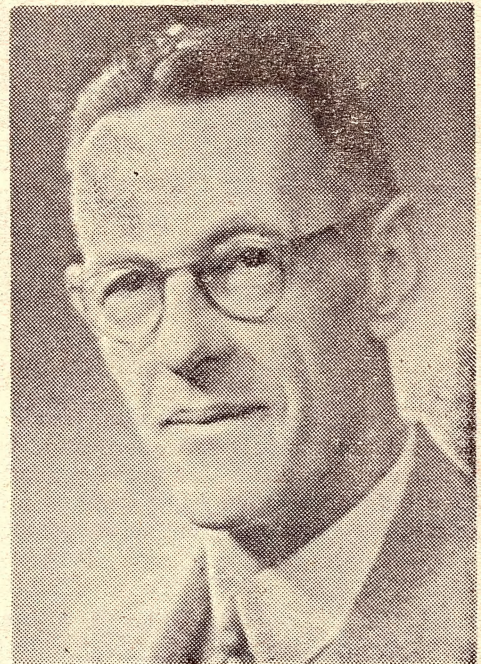
By

EDWARD G. SMITH,

Dominion President,
New Zealand

Educational Institute,

1953 - 54.



*Here is a book which not only tells you a great deal you
did not know before about some of our main New Zealand
industries, but contains other highly interesting information
as well.*

*This is a rather exciting sort of social studies, isn't it?
In our daily lives we see so many interesting things around
us, and often, we wonder just how those things are made.
When we start to think about them and read about them,
as you will do here, we are astonished at the careful thought
and planning that has to be done.*

*If you read this book very carefully you will be amazed
at what you have learnt. If it makes you curious to learn
more, the sponsors will be pleased and so will your teachers.
We shall all then feel that when the time comes for you to
take your part in "Making New Zealand" you will be all the
more able to make our country an even better place in which
to live.*

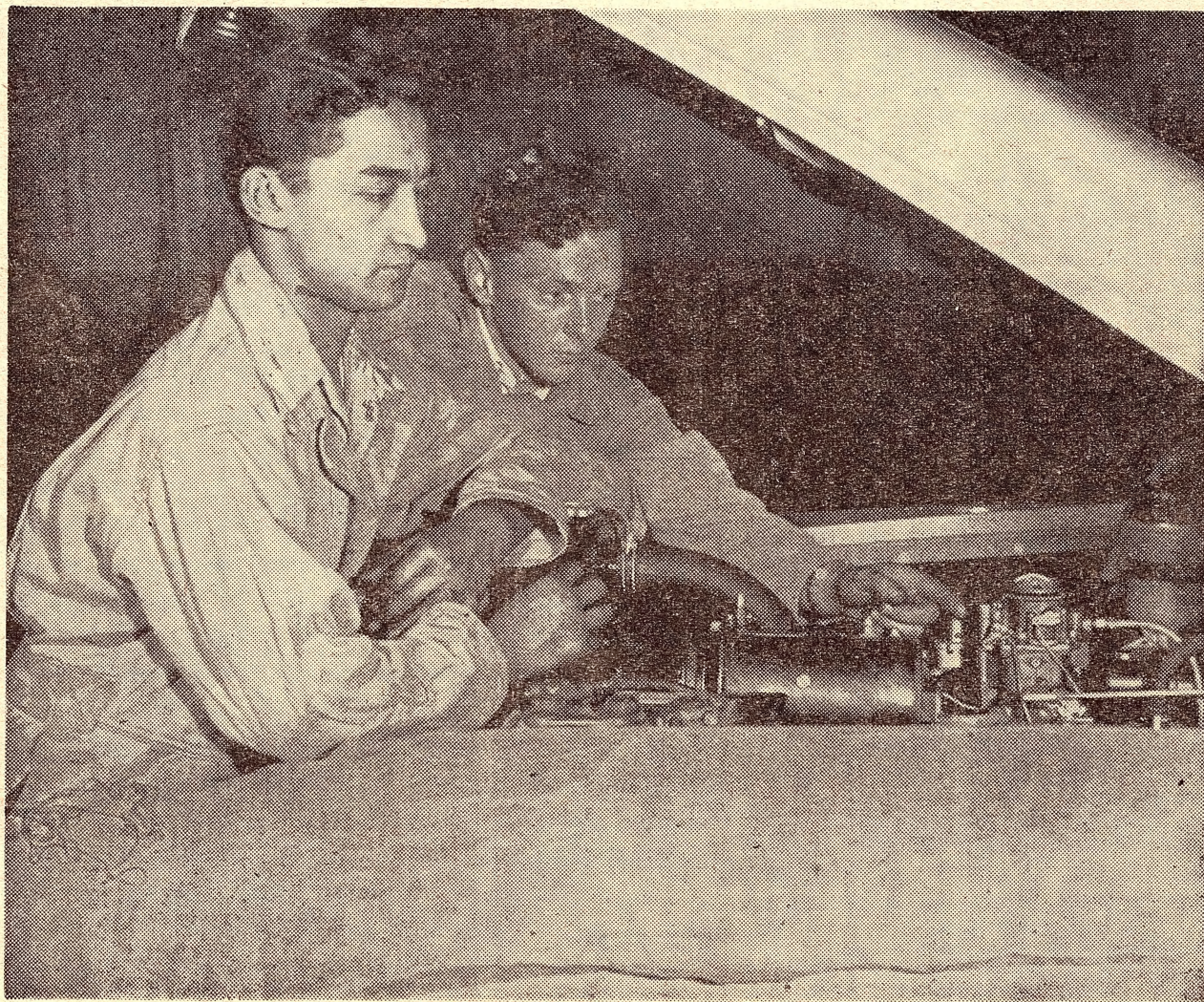
*It is a good thing that business people should be
interested in our schools. It is just as important that you
should know as much as possible about how the wheels of
industry turn. Indeed, industry is so important to the welfare
of New Zealand that special visits were arranged for Her
Majesty Queen Elizabeth II and His Highness the Duke of
Edinburgh when they visited our country earlier this year.*

Edward G. Smith

THE FUTURE IS IN YOUR HANDS

(Contributed by the Department of Industries and Commerce)

LAST year in the New Zealand Trades Alphabet, the building of New Zealand from a group of scattered coastal settlements into a modern state was described. In attaining nationhood, however, we have not completed or finished the task which faced our forefathers. The foundations which were so firmly laid by the pioneers have been built upon. We have reached nationhood and now we in our turn must plan and lay the foundation for a greater New Zealand—this is not meant in an aggressive sense. The source of our greatness lies within ourselves and the resources of our own beautiful islands.



THE ENGINEERS OF TOMORROW

THE ADDRESS FOR YOUR COMPETITION ENTRY IS GIVEN ON PAGE 4.

(Continued on page 6)

A is for AMM-I-DENT

It FIGHTS TOOTH DECAY—
Because IT'S AMMONIATED
In nature's own way!

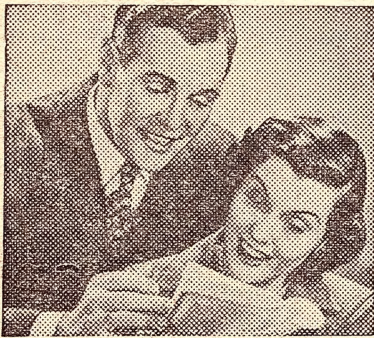
Read this interesting Amm-i-dent Story . . .

"BRAVE LITTLE JIMMY"

FOR a long time Jimmy had been a brave little boy. He'd told no one—not even Mummy—of the pain he'd get sometimes in his face. It hurt so much that he played all the games he could at school to forget the pain for a while.

Jimmy's success at sport was wonderful. He'd been chosen for the school football team, then the cricket team . . . but at his lessons Jimmy was not very good. You see, though he didn't know it, he couldn't settle his mind on his work because of the pain he suffered. One day his teacher asked him to stay behind after school.

"Jimmy," said his teacher, "I want to talk to you about your school work. You're a bright boy and you should be doing better. Tell me, why aren't you able to remember what you are taught?"



Let Mummy and Daddy read this story—or better still, you read it to them.

Poor Jimmy was very worried. He had tried so hard to get on . . . and knew he had almost failed last term. Tears came to his eyes. "I don't know, sir," he stammered. "I've tried hard. I just can't do it."

"Jimmy—you should be able to. Two years ago you were at the top. Last year you were average, but this year your work has been bad," his teacher said quietly. "Perhaps you're not well!"

"I'm all right, sir," Jimmy replied.

"Do you sleep well at night?"

"I wake every now and then, sir."

"And why should you do that, Jimmy?"

Jimmy knew he was slowly being cornered and might have to tell how much his face hurt him.

At that moment Jimmy felt almost as if his face had been struck by lightning—he cried out and clasped his hands to his jaw.

"What on earth's the matter," exclaimed the teacher.

"It's my face, sir." The reason was out now, thought Jimmy. "Don't worry, sir," Jimmy continued, "It'll be all right in just a minute."

"Indeed it won't," came the reply. "You're coming with me . . . to the dentist."

"So you're the lad I've seen play so much good football," the dentist said to Jimmy as he inspected his teeth. "Well, it's a pity you haven't taken the care over your teeth that you have to learn your sports young man. Haven't you had terrific toothache lately?"

"At times, sir," Jimmy replied.

"There are two teeth here that probably have been aching most of the day and night for perhaps two or three months. Didn't your mother know?"

"No, sir."

"You mean you didn't tell her," the dentist said.

"Er—er—yes, sir."

"Well, Jimmy, you've been a very brave boy—but you've suffered needlessly and your health and school work have both slipped back as a result. Didn't you realise your teeth needed attention?"

"No, sir."

"Well, let me tell you something about your teeth and what you can do to keep them in fine order. Firstly, Jimmy, you must visit your dentist twice a year and brush your teeth regularly. Maybe you have wondered why some people who don't take special care of their teeth seem never to have any trouble with them. That's because they have more of Nature's own ammonia in their mouths than most other people. When we eat food, particularly starchy foods like bread, sugar and potatoes, small pieces of food get caught between teeth and these are attacked by germs and form acid. These acids cause all the trouble because they slowly eat away the tooth surface, make holes or cavities and cause toothache.

"Nature fights these acids with a substance called urea, which is in everyone's mouth. This urea slowly produces ammonia and as acids cannot exist in the presence of ammonia the teeth are protected from acid action. This urea can also pass right through teeth to be stored inside each tooth so that when it is needed it passes out again and protects the teeth for a long time. Unfortunately most people do not have enough of this urea and the acid eats their teeth away. These acids are mild in themselves and you can't tell by taste or smell when they're present.



Now, Jimmy, dental scientists have done a great thing. They have discovered how to put this urea into a toothpaste in such a way that it will actually produce ammonia in the mouth. You see, it gives double protection. First, the ammonia brings back Nature's true condition around the teeth; second,

when that disappears the urea which is stored inside each tooth works back to the surface and keeps that anti-decay condition for hours around each and every tooth."



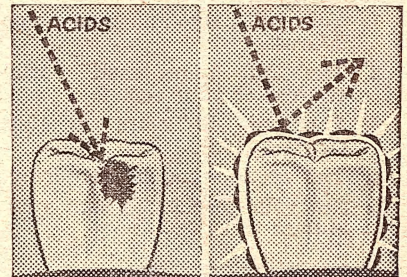
"Gee, that's wonderful," said Jimmy. "Does that mean no more holes in my teeth?"

"Not exactly that. With most people that could be the case. But then there are always some who miss cleaning their teeth properly with this ammoniated toothpaste and find their dentists have to make fillings."

"Sir, this is wonderful news! Can you tell me what toothpaste it is and how I should use it?"

"Of course. It's Amm-i-dent Ammoniated toothpaste—the only one today that contains these great discoveries. You should use it every morning and just before bedtime, but if you want to have good teeth all your life, also use it after every meal and brush for two minutes."

"Thank you very much sir. I don't want any more painful toothache," said Jimmy happily. "I'll ask Mum to buy some Amm-i-dent today."



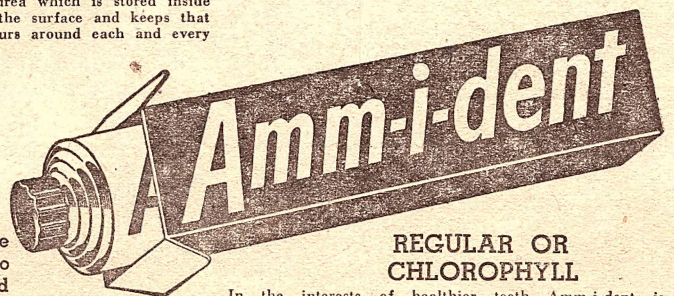
This shows how acids eat into the tooth enamel but are beaten off by the ammonia of Amm-i-dent.

"Yes, Jimmy, Amm-i-dent will help you reduce tooth decay. Take a note yourself this year how many fewer tooth fillings (cavities) you have compared with last year. Also write the manufacturers for an interesting booklet telling you all about Amm-i-dent and how it protects you from tooth decay. After a year write them again and say how many fewer cavities you have had."

"I'll certainly do that, sir. And I'll tell my classmates . . . they might write in, too."

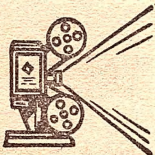
A month later Jimmy was in tip-top health and in the top ten of his class. That's how much difference healthy teeth made to him.

Although Jimmy was a boy full of courage he didn't know how to look after his teeth. Don't you make the same mistake, will you?



REGULAR OR
CHLOROPHYLL

In the interests of healthier teeth Amm-i-dent is prepared in N.Z. for Amm-i-dent Inc., New York, by Wilfrid Owen Ltd., 104 Victoria Street, Christchurch.



FREE FILM — FREE BOOKLET

Ask your teacher to write for an interesting Free Film showing how to care for your teeth. Also write for a Free Booklet for yourself to: Wilfrid Owen Ltd., P.O. Box 210, Christchurch, to help you prepare your essay or project entry.

HOW TO WIN AN ALPHABET PRIZE

RULES

Follow These Simple Rules:

- (A) Send your entry to "The New Zealand Trades Alphabet," Box 2374, Wellington, or deliver it to our office at Nathan's Building, Grey Street, Wellington.
- (B) Your entry must be sent **BEFORE** 15th October, 1954.
- (C) Attach a label from the product your entry refers to, or, if it has no label, an advertisement or article about it, or attach a cutting from the literature received from one of the firms.
- (D) **GIVE THE FOLLOWING PARTICULARS OR YOU WILL NOT BE ELIGIBLE FOR PRIZES:—**
1. Your full name and your home address.
 2. The full name and postal address of your school.
 3. Your age in years on 15th October, 1954.
 4. The section you are entering.
 5. Get your teacher to sign your entry.
- (E) **WHERE TO WRITE YOUR PARTICULARS:**
- Essays:** On the back of last page.
- Handwriting:** On back of last page.
- Junior Projects:** On top right-hand corner of picture chart.
- Senior Projects:** On the first inside page of the book.

NOTE:—

1. The judge's decision will, of course, be final, and a complete list of prize-winners will be posted to each school from which entries in the competitions are received.
2. Prizes will take the form of orders on suppliers, and these will be forwarded to schools as soon as possible after the judging has been completed.

HANDWRITING

First of all, read the rules on this page. Then put a circle round the number for your age. If you will be 12 years old on October 15, 1954, draw a circle around the number 12 printed below, and read beneath that the simple instructions telling you what you have to do to win a prize.

6 years old Section A

7 and 8 years old Section B

If you are in Section A or B, open your "Alphabet" at the inside front cover. Then you write, or script print, all the words in capitals in each rhyme, commencing with the words in capitals in the rhyme on the inside front cover, "With a Biro," and so on, finishing with the rhyme on the back cover.

You may use either a pen, a ball point pen or a pencil.

There are three main prizes of £1 each, and six at 10/- each, for these sections, and also a number of 5/- prizes.

9 and 10 years old Section C

11 and 12 years old Section D

13 years and over Section E

Here's what you do if you are in Section C, D or E. Write out the first line of each of the rhymes on the pages and covers of the "Alphabet," and also all the words in CAPITAL letters in these rhymes. You would commence by writing, "Whatever you write with a Biro," and then write the first line and all the capitals in all the other rhymes, finishing with the rhyme on the back cover.

Use a pen or ball-point pen and be sure to write every word or letter, do not print.

There are three main prizes of £2 each, and ten at 10/- each, for these sections, and also a number of 5/- prizes.

Altogether, there are 184 prizes at 5/- each in Sections A to E.

ESSAYS

First of all find out what age you will be on the 15th October, 1954, then look for your age printed below. If, for example, you will be 9 years old, just draw a circle round the figure 9, and you will see that you are in SECTION B.

SECTIONS TO ENTER

If you are:—

7 or 8 years Section A

9 or 10 years Section B

11 or 12 years Section C

13 or more years Section D

ESSAYS TO WRITE

If you are in Section A or B or C write a story in your own words about:—

THE PRODUCT DESCRIBED ON ANY PAGE OF THE ALPHABET WHICH HAS A RHYME AT THE TOP, OR ON ANY COVER.

Your essay should be from one to two pages in length.

If you are in Section D, write two or three pages about:—

"HOW THE ALPHABET EDUCATES ME IN NEW ZEALAND'S INDUSTRIAL PROGRESS, AND GIVES ME FAITH IN HER FUTURE DEVELOPMENT."

PRIZES FOR ESSAYS

In both Section A and Section B:—

Two at £1 each and five at 10/- each; also a number at 5/- each.

In both Section C and Section D:—

Two at £2 each, and ten at 10/- each; also, a number at 5/- each.

Altogether there are 160 prizes at 5/- each, in Sections A to D.

NOTE: Before mailing your entry, be sure to write your name, age, etc., on your entry. See rules on this page.

£500 IN PRIZES

£250 FOR COMPETITORS :: £250 FOR THEIR SCHOOLS

Read details of Project Competitions on pages 44, 46 and 48.

B for "B.A.L.M" PAINT
and its long-renowned name,
with Quality winning
such well-deserved fame.



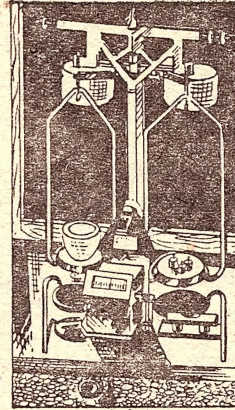
*Why
paint
making
is an
exact
science*



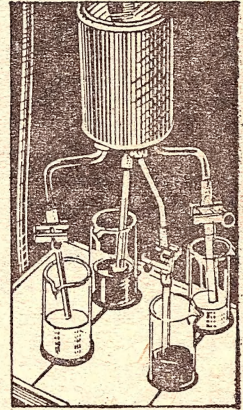
Good paint must be tested at every stage of its manufacture to ensure that its various properties conform to a strict uniform standard. This rigid laboratory control is absolutely essential to its unvarying performance and results.



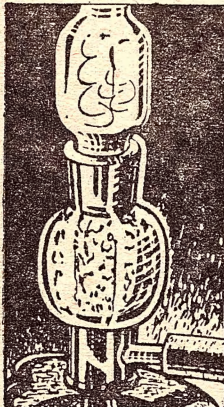
This uniformity starts with the testing of the raw materials, for you cannot have a uniform quality of paint unless the materials are absolutely uniform from which it is made. Essential raw materials in the making of good paint are white lead, linseed oil, chemical and natural pigments, synthetic resins, etc.



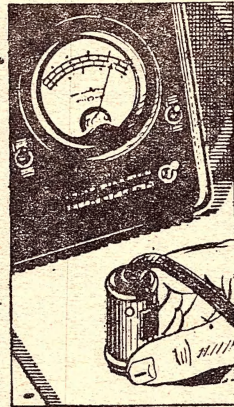
Here is one of the most valuable items of equipment in the whole paint laboratory. It is a sensitive analytical balance used for weighing minute quantities of chemicals. These balances are accurate to one ten-thousandth part of a gramme.



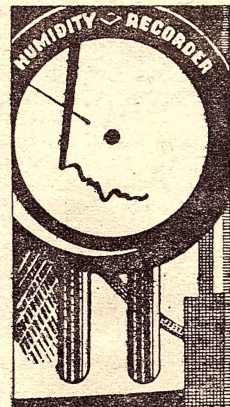
When paint is applied by "dipping" and other mechanical methods, it sometimes absorbs gases from the air which might cause deterioration later. The clever device shown above tests the resistance of a paint to these conditions.



The composition of paint is greatly affected by the size of the PARTICLES of the white lead. In the "Absorption Tower," shown above, the size of these white lead particles is tested by its absorption of carbon dioxide supplied to it through the tube at the right.



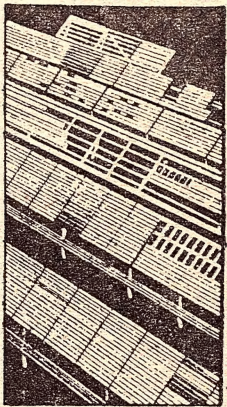
Here is the "Film Thickness" test. This "Film Thickness Meter" magnetically measures the thickness of the paint film. It is accurate to one five-thousandth of an inch. The paint on the panel in the picture is registering a film thickness of four thousandths of an inch.



The "Refrigeration" Test. This is the "Temperature and Humidity Recorder" attached to the giant refrigerator which tests the ability of paint to dry at low temperatures and in adverse "dry" weather conditions.



The "Accelerated Weathering" machine. In this chamber, painted panels are alternately subjected to ultraviolet light (concentrated sunlight), heat and humidity. Three weeks of this punishment approximates one year's normal exposure. What a test for durability!



Many other tests are carried out during and after the paint is manufactured. This, for instance, is a "Paint Farm." Here pieces of wood or steel, painted with various paints and finishes, are exposed at an angle of 45° North (twice as severe as normal vertical exposure) and the resistance to weathering of the paints being tested is checked and measured.

B.A.L.M
HIGHEST GRADE PURE PREPARED
PAINT

So you now see that the "B.A.L.M" paint you buy is the result of the most scientific testing from first to last. Write to: Box 90, Lower Hutt, N.Z., for further material to help you in your project.

A product of
**BRITISH AUSTRALIAN
LEAD MANUFACTURERS**

(N.Z.) Ltd.

Wellington, Auckland, Christchurch, Dunedin

The Future Is In Your Hands

(Continued from
page 2)

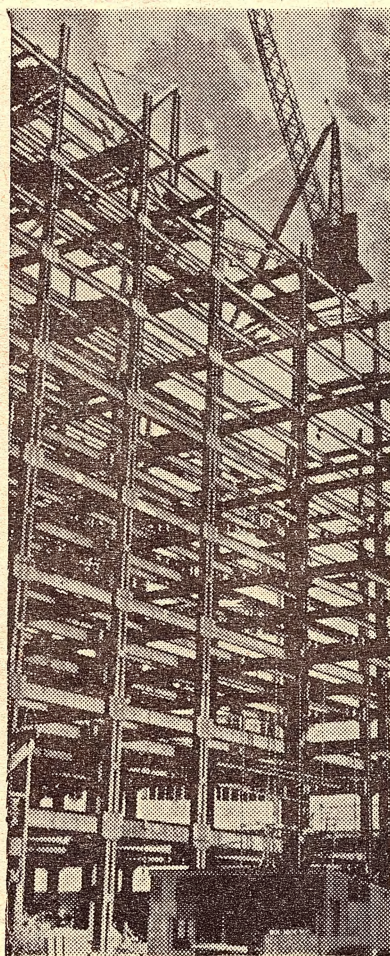
History teaches us that a nation and a people must never become static, must never reach a certain stage in development and then sit back in a self-satisfied mood, accepting what has been done and looking with gratitude to the past but with complacency to the future. In this way lies disaster. A nation is not a dead abstract something, but a living ever-growing organism that must be fed and cared for. A nation's "food," its life-giving substance, is the will to work, the will of its people to plan and to develop—for in the final analysis a nation, no matter how beautiful and rich its environment, is dependent on its people to live.

By material standards New Zealand today is prosperous, not wealthy, but comfortably off, with an income sufficiently high to maintain a good standard of living. This is the New Zealand before our eyes, the New Zealand that can be described in figures—total population, number of factories, number of farms, the quantities of goods produced on the farms and exported from New Zealand. There is another New Zealand, one we cannot see with our eyes but can only feel or picture with our minds. This other New Zealand is, however, a very real one, for we ourselves are this New Zealand.

All of us, whether we are still at school, or whether we have grown up and are the farmers, the factory



BUILDING AT PLAY WHAT THEY WILL BUILD LATER IN REALITY.



A FRAME FOR THE FUTURE.

workers, shopkeepers, doctors, nurses, teachers, carpenters, bus drivers or mothers, form this New Zealand. This is something that we must all realise—that we are not individuals but all members of a great family.

In a book printed not so long ago, a man wrote a story of what the world would be like in the 1980's. It was a dismal, drear world, a terrible world. It is unlikely that the world pictured by the writer will ever come about, but it is possible, and it is our duty to ensure that it does not. By 1980 those of you now at school will have grown up, will have your own homes and will be well-established in your chosen careers. The grim world of the 1980's pictured in the book I mentioned is a warning to us of what can happen if we become apathetic. However, if we assume that our country will continue to develop on its present pattern we can picture what New Zealand will probably be like in 1980—the period of your adulthood.

Firstly, there will be many more people here. New Zealand's population today is estimated at 2,050,000 people, by 1980 it is expected that this figure will have risen to about 3,300,000 through natural increase and through continued migration of peoples from the old world.

The cities will be larger, cleaner and more beautiful than they are today, and there will be new towns growing up where today there is only open country or lonely beaches. There will be more farms—farms equipped with all the labour-saving machinery that industry can produce. The farms may be smaller, but they will be compact and efficient.

Our roads will be wider—long straights blending into graceful banked curves to carry the high-speed traffic that will be normal by the 1980's. From the airports jet and rocket boosted aircraft will be carrying people and goods to the other side of the world in a matter of hours. Perhaps by 1980 the first rocket ship will have reached the moon.

It will be an exciting life in an age where the organising skill of men and science are applied to the resources of the land, the waters and the forests to yield great benefits for the people.

From the first awakening of man, generation after generation have been seeking to advance beyond the point at which their parents left them. The torch of progress, although it has been dim at times, has been passed on in faith and trust to each succeeding generation. Now the torch light is getting brighter, we know more.

Soon it will be your turn to carry the torch forward. It is up to you to see that the torch does not dim but shines stronger still when in your turn you pass it on to the generation following you. Life is a great adventure, but it is also a great responsibility. A great Englishman wrote the following lines which I would suggest you think about from time to time:

"That country is the richest which nourishes the greatest number of noble and happy human beings: that man is richest who, having perfected the functions of his own life to the utmost, has also the widest helpful influence, both personal and by means of his possessions, over the lives of others."

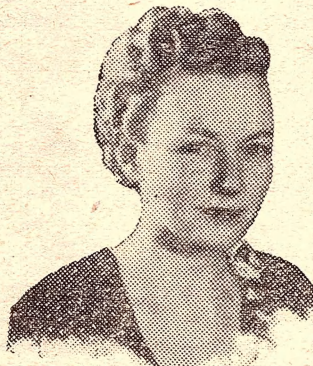
JOHN RUSKIN: "Unto This Last."

The firms advertising are willing to send information to assist you with your project or essay. Write to them early.

C stands for CREST
 The name that means
 Barbecue Sausages Best
 With SPAGHETTI and BAKED BEANS



The Story of Butland Industries' Home Economics Department



Miss Judith Ann Field, Director
 Department of Home Economics.

Dear Girls and Boys,

I am delighted to have the opportunity to tell you in the Alphabet something of my work as Director of Home Economics Department at Butland Industries.

I have said "Dear Girls and Boys," for although I know every girl is interested in kitchencraft, I know many boys who are interested in and keen on cooking and the preparation of food, and find it great fun.

Since I graduated in Home Economics from University, I have specialised in Home Science and practical kitchencraft and the object of my position here is to help everyone interested in cooking by making available information about food and nutrition and Home Economics generally. Much of my time is spent testing new recipes so that I can suggest different methods of preparing and serving all manner of dishes. As you will be able to imagine, this is very interesting work and our model research and testing kitchen at Butland Industries is a fascinating place.

First my assistants and I test, prove and tabulate new methods of serving for all Butland Industries' products. Chesdale Cheese, the wide range of Crest canned foods, the Goldpack Fruit lines (Mixed Cake Fruit, Preserved Ginger, Cherries, etc.), and all the other Butland Industries' products which you know so well are on my shelves here, for when I am developing new serving ideas you can picture me as you would your mother working in the kitchen at home.

Every few weeks I compile a Bulletin in which are printed all these new ideas and these are available to everyone who writes to me care of Butland Industries.

Another aspect of my work is the development of entirely new products to be packed in our modern factory here which is itself like a tremendous kitchen. Sometimes many months of effort are necessary to perfect a new line and in this work I co-operate with our research chemists and production people. This close teamwork is a feature of life at Butland Industries and it is the object of all of us to produce perfection in every new line for your table.

We certainly have every modern facility to enable us to achieve this goal: new spacious, airy, spotlessly clean premises, the latest specially imported stainless steel processing plant, a large and completely equipped laboratory and a staff of experienced production folk. I am sure you will have tried our new Crest Baked Beans with Barbecue Sausage in Tomato Sauce and Crest Spaghetti with Barbecue Sausage in Tomato Sauce and you will be interested to know that both of these products were developed in my research kitchen.

Most girls nowadays are very fortunate in receiving cooking instructions as a regular subject at school and I know how you all look forward to these classes. A knowledge of cooking and the best ways to serve food is a great asset even when you are young, for although you may not have the responsibility for the preparation of meals at present you can be a big help to mother, and remember, as in everything else, practice in cooking and food preparation is essential if you are to become accomplished at this useful and exciting craft. Who knows, perhaps some of you may even take up Home Science instruction as a career.

FREE BULLETINS

If your mother is not already receiving regular copies of my Bulletins, perhaps you would like to include her name and address when you write to me and I shall post them to her regularly.

Good luck to you all.

Yours truly,

Judith Ann Field

FREE COOKERY BOOK

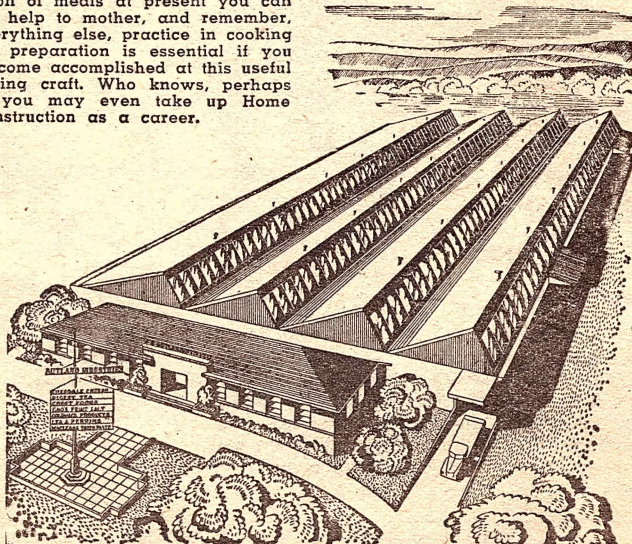
I have prepared a special junior cook book for you girls and I shall be happy to send you a free copy if you will write to me care of Butland Industries.

If you have any questions at any time on cooking, home science or practical kitchencraft, please write to me and it will give me great pleasure to answer your queries. I do sincerely hope that I shall hear from all of you from time to time.

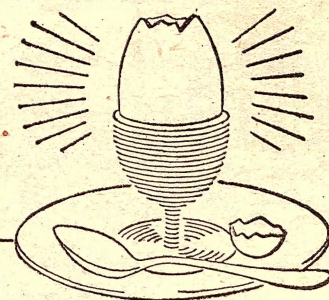


BUTLAND INDUSTRIES

GREAT SOUTH ROAD " ELLERSLIE " AUCKLAND



D is for *DIET*
an *EGG* every day
gives you the *VITAMINS*
to keep sickness away



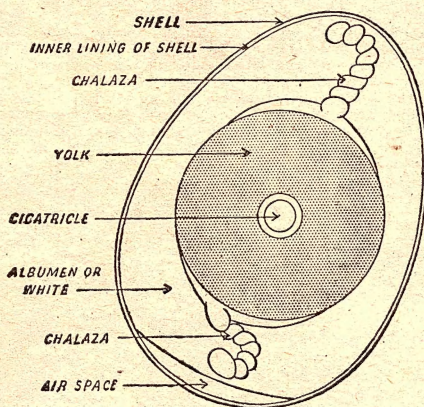
the egg — and you!

Ye Olde English "æg"

Our modern word "egg" is descended from the Olde English form "æg." From the Latin comes the word "ovum"—from which we have developed "ovoid"—egg-shaped.

Producers of Eggs

Now about those creatures that produce eggs—not just birds and fowls either. Some mammals lay eggs—for instance that peculiar Australian, the Platypus. Then there are frogs and toads—they lay eggs. Crocodiles and alligators lay eggs. (Our Tuatara is in this class). Then there are fish eggs—and even insect eggs. Not all these eggs are alike. Some have hard shells, others soft; some are big, others small; the Tuatara lays ten eggs a year, the Herring fifty thousand. But the eggs are produced for the same primary purpose of the reproduction of life—to provide shelter and food for the embryo chicken, schnapper, platypus, etc., until it can fend for itself.



Air Canals

Take a look at the egg we are most familiar with—the ordinary fowl's egg. It has a hard shell of three layers of limestone. Through these run canals to let air into the growing embryo, which the shell protects. The white and the yolk are the food. Together they make up one of the most concentrated food forms we know.

Study this chart. These same vitamins, minerals and proteins, necessary for the growth of the chicken, are vital to human beings. Eggs provide one of the best sources of them.

Vital Foods in One Egg

VITAMINS	A — 450 International Units.
	B1 — 65 Microgrammes.
	B2 — 850 Microgrammes.
	D — 10-50 International Units.

MINERALS	Iron
	Phosphorus
	Sulphur
	Calcium

VARIOUS	Proteins—14 per cent in ONE egg
	Fat—in both white and yolk
	Carbohydrates and trace minerals.

OTHERS	All these Vitamins, Minerals, Proteins,
	Fat and the other lesser foods are in ONE fowl's egg.

Special Laying Breeds Developed

Poultry farming for egg-production is carried on in nearly every country—in England, New Zealand, Australia, Canada, Eire, United States, Denmark and China, it is one of the most important branches of farming. Special breeds of fowls have been developed for egg-production. The Australorp was developed in Australia for this purpose. The White Leghorn is perhaps the best egg-producer in the world. These two breeds plus the Black Orpington are the most common breeds in New Zealand.

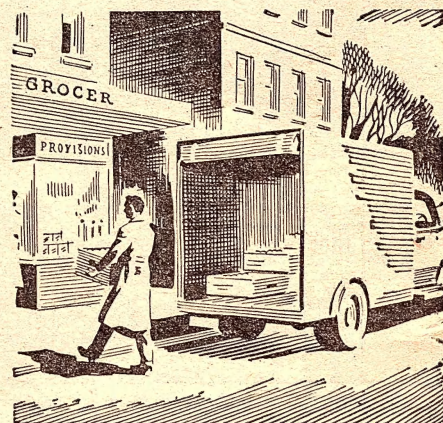
V.I.P. the Fowl

In New Zealand 35-40 million dozen eggs are laid every year. Some of these millions come from home fowl houses; but the great majority come from poultry-farms. Here the fowl is No. 1 on the list of Very Important People. Every effort is made to promote their laying ability. They have a balanced diet—not just odds and ends and some grit for these birds, but a carefully planned diet of grain, mash and green feed. They have sheds specially designed to protect them from extremes of heat and cold. Well housed, with good management and planned feeding, a good bird should produce 130 to 140 eggs a year.

The Egg Marketing Authority

The Poultry Farmer collects many hundreds of eggs every day. He has the eggs, now he must get them to the people who need them—people all over the country—hospitals, schools, hotels, military camps, restaurants, homes—people everywhere. What an impossible task this would be for the poultry farmer on his own!

Eggs are perishable goods—therefore the poultry-farmer cannot store them away until someone buys them. So to get the eggs to where they are needed, when they are needed, there exists The Egg Marketing Authority, representative of the whole Poultry Industry. All over the country The Egg Marketing Authority has receiving depots—known as egg floors. The poultry-farmer takes his eggs to his local egg floor, which operates under licence and conditions laid down by regulation and administered by The Egg Marketing Authority. The eggs are inspected, graded and packed. Then they are sent to your grocer or dairy.

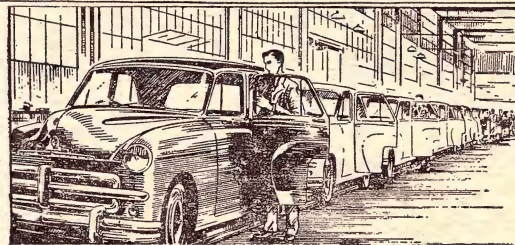


In this way, every city and town gets its fair share of the eggs that our poultry-farms produce. Thus, you get your daily supply of eggs, essential to your health and well-being. Surplus eggs are manufactured into egg pulp or chilled to supplement the low production period in the winter.

FREE! Send to The Egg Marketing Authority, G.P.O. Box 379, Wellington, for your FREE COPY of the fascinating indoor game "Egg-Shells" (or "Which Came First—the Chicken or the Egg?") On this 17in. x 12in. card are printed further interesting facts about Eggs that will help you in your Projects, Essays, etc.

E

for EXACTING
the CARE that we take
with all G.M. PRODUCTS
in design and in make.



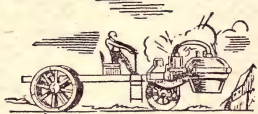
AUTOMOBILE PROGRESS

1600



A successful sailing chariot designed by Simon Stevin of Holland

1769



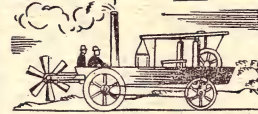
Primitive self-propelled road vehicle built by Nicolas Cugnot of France

1801



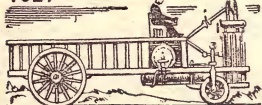
First steam-carriage built by Richard Trevithick in England

1804



First American self-propelled vehicle built by Oliver Evans

1827



First differential invented by Onésiphore Pecqueur of France

1832



First three-speed transmission patented by W. H. James in England

1886



One of first gasoline engine powered automobiles, German Daimler 1886

1893



Three wheeled automobile built by Charles Duryea of Illinois

1902



First volume production car — the curved dash Oldsmobile

1903



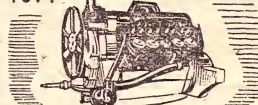
First Vauxhall car — a 5 h.p. single cylinder. Tiller steering

1911



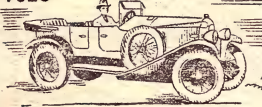
First electric self-starter installed on Cadillac.

1914



Cadillac introduced the V-8 engine.

1923



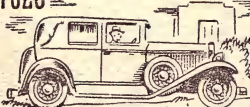
4 wheel brakes on Vauxhall... Lacquer finish on production Oaklands.

1926



General Motors New Zealand Limited commenced car production.

1928



Synchro-mesh transmission on Cadillac makes clutchless gear shifting possible

1934/5



Independent front suspension. Safe All-steel "Turret Top" Body.

1938



Integral body and chassis introduced on Vauxhall.

1940



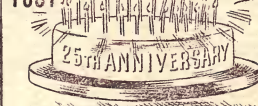
General Motors completes its 25,000,000th car.

1946



Post-war vehicles benefit from war-time experience

1951



General Motors New Zealand Limited celebrates 25th Anniversary

1952



Cadillac's 50th Anniversary. GM "Autronic Eye" — first automatic headlight dimmer.

1953



Buick's 50th Anniversary. Chevrolet "Corvette" uses glass-fibre body.

THE GENERAL MOTORS FACTORY at Petone is open to visitors, who, at certain scheduled times each day, are taken on a conducted tour of the plant's automotive assembly and manufacturing operations.



VAUXHALL • CHEVROLET • PONTIAC • OLDSMOBILE • BUICK CARS • BEDFORD AND CHEVROLET TRUCKS

GENERAL MOTORS NEW ZEALAND LIMITED

BOUVERIE STREET • PETONE

DON'T ASK DAD DO IT YOURSELF



ALL MINE AT LAST

AS I listened to these two boys I thought of the times I used to stop in front of bicycle shop windows. If I saw a model I liked, I sometimes went inside and asked the salesman to show it to me, though I didn't have enough money to buy it. I'd ask him to let me sit on it, and I'd run my fingers over the shiny chrome and the smooth black leather saddle. Then I'd have to tear myself away and tell the salesman I'd come back when I'd saved enough money to buy it.

I was eleven when I first made up my mind to buy a bicycle. I have three brothers and two sisters, so I knew my Dad would never be able to buy me a big present like a bicycle. If I wanted one, I'd have to buy it myself.

All through primary school I used to put a 6d. or a 3d. from my weekly allowance into the school bank. By the time I was starting high school, I had saved £11, more than half as much as I needed to buy a bicycle.

That summer, a friend of mine, Jimmy Cunningham, and I formed a lawn-mowing company. We went to a dozen of our friends and asked them if they would pay us 10/- a month to keep their lawns in order. Only ten of our neighbours agreed to join our company, and actually that was enough because we wanted to have time free to play games. Three months later Jimmy and I divided our income of £15 plus 10/- bonus from one man with a particularly large lawn — £7/15/- each.

I now had £18/15/-, just £2 short of the amount I needed for the bike at Pat's sporting goods shop. I went round to see Pat, put £2 down, and told him to hold the bicycle for a month.

The second week in April I was raking some leaves from our back garden and got talking to Mr. Reid, our

The other day I saw a couple of school boys pressing their fingers and noses against the window of a bicycle store.

"My Dad's going to buy me one like that for my birthday next month," said one of the boys, pointing to a beautiful red sports model with chrome wheels.

"I'm going to get one in June if I pass my exam," the other boy boasted.

next-door neighbour. He had been digging a two-foot trench along one side of his garden for a week, and I was pretty curious about what he was up to.

"What are you digging for, Mr. Reid?" I asked. "Are you looking for buried treasure or something?"

Mr. Reid laughed and said no, he wasn't looking for treasure, he was preparing to build a retaining wall to protect his garden. The wall would prevent the soil from being washed away and would help to shelter his plants from the westerly winds. Did you see a load of bricks on the front path? I am going to use them to make a brick wall.

That night I woke up dreaming of Mr. Reid's garden. Why couldn't I help by bringing the bricks up to the trench for him, and earn £1 into the bargain.

I knocked on Mr. Reid's door the next day after tea. I asked him if he had someone to bring the bricks to where he wanted them, and he said he hadn't anyone yet. I told him I'd carry them for only £1. Mr. Reid agreed that was mighty cheap.

The bricks were pretty heavy, so I couldn't carry many at a time. But with several trips at lunch time and some more after four o'clock each day, I soon finished the job, and collected my £1. Mr. Reid then offered to give me another £1 if I would help him each afternoon till he had the wall built. To this I readily agreed and received my money on the 1st May. On the 2nd I bought my bicycle.

You've never met a prouder bike owner in your life.

Pat showed me how to take the back wheel apart to clean the brake. My Dad let me borrow the car polish he used to keep his car shiny and bright. And I always cleaned the bike after every wet day and oiled and greased it once a month. I guess because I bought it myself I took better care of it than some boys who waited for Dad to give them one.

Perhaps you've heard the saying that "a little money makes more money." That was definitely the case with this bicycle of mine. The following September I read an advertisement in the evening newspaper for "a keen boy with a bicycle." I answered the ad, and went to meet a Miss Kennedy, who directed a ladies' dress shop. Miss Kennedy chose me from a dozen boys who applied. I think she liked me because I told her I wanted the money to help pay my way through the Uni-

versity. I remember she said: "You're certainly looking a long way ahead."

In three months delivering Saturday mornings to customers of the dress shop I had earned more than the bicycle had cost.

There was something else I learned by working and saving and finally buying something I wanted. I learned that if I made up my mind to go after something, there was nothing that could stop me succeeding.

The following Christmas, at the end of the school year, I had the trip I wanted to make. I paid all the expenses out of my own bank account.

During my last year at school I sold advertising for the school magazine and put aside the commission to help pay my fees at University. You know that going to University is very expensive, and with three brothers ahead of me I couldn't expect any help from Dad. I also wanted to travel and see all the beautiful and historic places that I had read about at school. In fact, I managed to pay my own way through University—and to travel.

There are all kinds of ways to pay your way through the University. A couple of friends of mine, to take one example, formed a car-washing partnership in the last year at school. They first practised on their Dads' cars, then advertised their business among the neighbours. They charged six shillings a wash. The business had a slow beginning, but after six weeks or so, they had to find three boys to help take care of all the orders coming in. One of the partners has since bought his own garage.

I spent every University vacation in a different part of the country usually doing a different job, or several jobs each summer. If one piece of work ran out, I'd look for another, though it was best if I could find a job lasting 10 to 12 weeks.

There are lots of ways to work your way through University. Friends of mine sold magazine subscriptions, sprayed trees and mowed lawns, chopped timber, harvested wheat, picked grapes and peaches, greased cars, drove trucks, caddied at golf courses, worked in offices and factories, and on farms.

You can do the same. You can have that bicycle or sailboat you've been dreaming about. You can make that trip you have planned. And you can put yourself through University. You'll have the satisfaction of doing a job well, and doing it on your own. But you'll have to start doing something about it today!

F stands for Finance,
and your Future, too.
THE BANK OF NEW ZEALAND
will guard both for you.



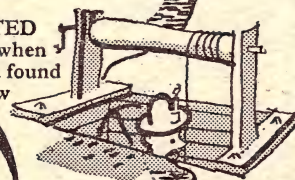
1855-56 saw gold discovered at the Aorere river, Nelson. Gold could be picked up by turning over quartz rocks. Later rich strikes were made in Westland which became known as the "Golden Coast". In 1866 gold worth £2,140,946 was exported from the Coast.



N.Z.'s first big gold rush was to Gabriel's Gully in Otago in 1861. Then followed the fabulous Dunstan Diggings in 1862 and many other rich claims on the Shotover and Arrow rivers. In two years, 42 TONS of gold were won by miners with most primitive equipment.

1852—New Zealand's first official gold field—Kapanga Stream, Coromandel—little alluvial gold found. 1867 saw big "rush" with discovery of rich gold-bearing quartz reefs.

N.Z.'s FIRST REPORTED GOLD FIND was in 1842 when a settler named McDonald found gold at Massacre Bay (now Golden Bay).



COROMANDEL & THAMES



1883 saw a minor "rush" to Cape Terawhiti where rich quartz specimens had been found. The reef was soon exhausted however and the mines abandoned.

1864 saw the rich Wakamarina strike—a "poor man's" gold field where gold could be picked out of the crevices in the rocks.



Prepared by the

**BANK OF
NEW ZEALAND**

THE DOMINION'S LARGEST BANKING HOUSE—ESTABLISHED 1861

CHILDREN—For the full, fascinating story of our Dominion's gold discoveries write to the nearest Branch of the Bank of New Zealand for the brochure "Gold in New Zealand".

SCHOOL TEACHERS—A brochure of banking forms suitable for class use is available on request from any Branch.

KNOW NEW ZEALAND

(Contributed by the Minister of Tourist and Health Resorts — Wellington)

There is such a variety of things to see and do in New Zealand, all packed into such a small area. The exciting thermal region is only a few hours from mountains and beaches, rivers where there is unexcelled trout fishing and a coastline where world record big game fish can be caught. In the South Island, in a day's travel, you can see beautiful lakes, great snow-peaked mountains providing thrilling ski-ing, mighty glaciers, sunny beaches and lakes and streams where there is excellent fishing.

Overseas visitors come thousands of miles to see all these wonders; we are fortunate because they are right on our doorstep.



GOLDEN KOWHAI

One of New Zealand's most beautiful flowering trees is the golden kowhai, which blooms in the spring. This tree is growing at Waipiro Bay, a popular beach on the East Coast of the North Island.



BEAUTIFUL PICTON

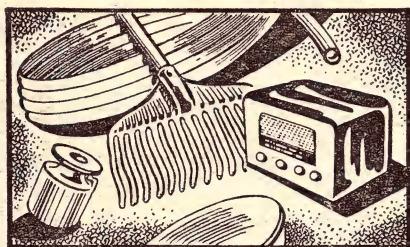
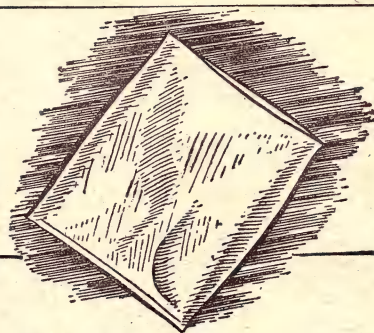
The pretty little town of Picton is situated near the top of Queen Charlotte Sound. Picton is only a little more than three hours by steamer from Wellington, and so is a popular holiday resort for people from the Capital.

(Continued on page 14)

THE FIRMS WILL SEND YOU LITERATURE TO HELP YOU WITH YOUR ESSAY OR PROJECT. WRITE TO THE ADDRESSES OF THE FIRMS GIVEN IN THIS BOOK.



is for **GARNITE**
as well as for glass
Our name for **PLASTICS**
Top of the class

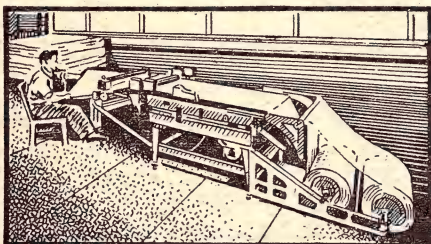
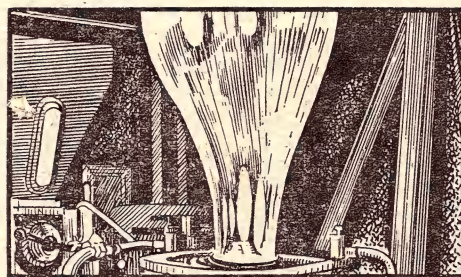


QUESTION 1: What is Garnite?

Answer: Garnite is the trade-name given to plastic products, made by the N.Z. Glass Manufacturers Co. Pty. Ltd., such as saucepan handles, radio cabinets, garden lawn rakes, water piping, electric fence insulators, cosmetic containers, rulers, bottle-caps, toys and ever so many more articles.

QUESTION 2: How are the many useful "Garnite" articles made from different plastic materials?

Answer: In machines they are compressed with high pressure and heat, either as a dry powder or changed to liquid, setting hard in steel dies of similar shape to the desired article. Pliable plastics, such as garden hose and Polythene film are forced out of "mincing" machines called Extruders. (Extrusion of film shown on right).



QUESTION 3: What is "Polythene"?

Answer: Polythene is the raw material used to make water piping, insulators, and many other useful articles as well as the light and pliable film from which Garnite food bags are made. It is odourless, tasteless and unaffected by any acids. Polythene was first developed in England some years ago and is scientifically made from a by-product of the Petroleum Refineries. (The picture on the left shows a machine making FOOD BAGS from Polythene, film produced in our factory at Penrose, Auckland.

QUESTION 4: What is Polythene plastic film used for?

Answer: Its main use is for packing of all kinds **PARTICULARLY FOR FOOD.** Being **VERY** resistant to moisture (even to moisture in the air), it is extensively used for packing food that must be kept dry—like our New Zealand dried milk powder for export. Because it can keep moisture **OUT**, it can also keep it **IN**, so is ideal for wrapping fish, vegetables and food that should be kept moist . . . (as for storing food in your home refrigerator) . . . and it is just wonderful for lunch bags! Sandwiches stay as moist and fresh as if they had just been made.



N.Z. GLASS MANUFACTURERS CO. PTY. LTD. (Plastics Division)

PENROSE — AUCKLAND
POSTAL ADDRESS — PRIVATE BAG, AUCKLAND.

Plan your project Essay entry now! Write for further information to the firms advertising.

KNOW NEW ZEALAND

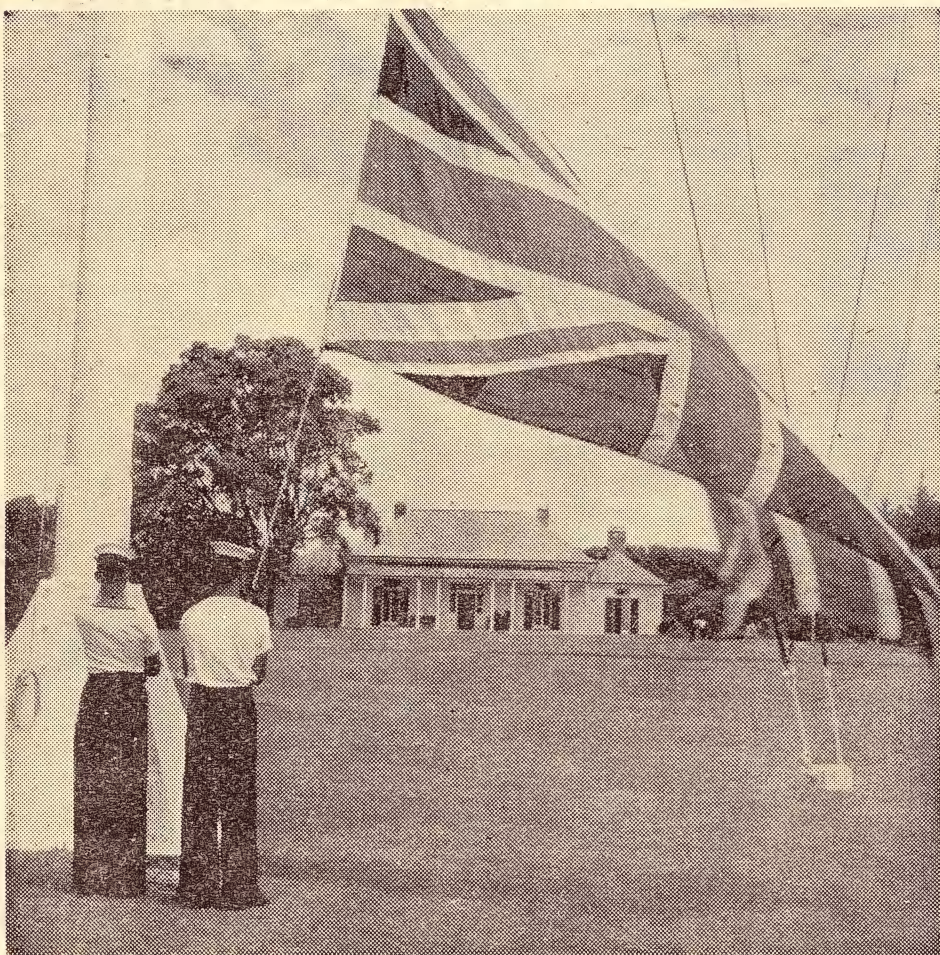
(Continued from page 12)



MOUNTS GREEN AND ELIE DE BEAUMONT



Ski touring is a sport popular with expert skiers. Here a group pauses for a moment before tackling a steep saddle. Behind them rise the peaks of Mounts Green and Elie de Beaumont.



THE OLD BRITISH RESIDENCY AT WAITANGI



New Zealand history was made here 113 years ago. This is the old British Residency at Waitangi. In front of which the famous Treaty was signed in 1840. Every year, a ceremony is held to commemorate this event.



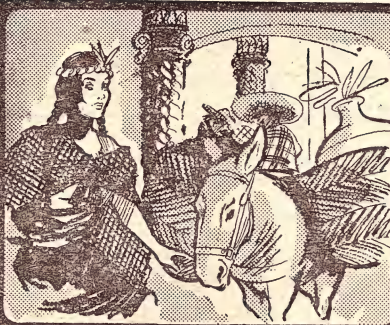
SEND AN ENTRY AND HELP YOUR SCHOOL TO WIN A GIFT. SEE DETAILS, PAGE 38.

H is for History
of men and events
all things have a story
here CADBURY presents . . .

THE HISTORY OF COCOA AND CHOCOLATE



"Jocallate," wrote Samuel Pepys in his 17th century diary, "is very good." You can see at once how the name has changed—and very likely Pepys would not recognise his "Jocallate" today. The cocoa-bean-based foods we enjoy differ enormously from his, which, again, were a far cry from cocoa's very earliest forms . . .



The cacao tree, from which the beans are obtained, is native to America. So far as we can tell, the Aztecs in ancient Mexico were the first to make "cocoa." They had no sugar but flavoured it with vanilla and spice and drank it cold. We are told that the court of Montezuma consumed fifty large jars a day. The conquering Cortes introduced cocoa beans to Spain in the 16th century. There the Aztec method was followed, chillies and other hot spices being used to flavour a soup-like beverage.



For over a century the Spanish kept their knowledge secret, cocoa's use not being recorded in England until 1650. About this time (the exact date is not known) the advantage of adding sugar was discovered and the beverage advanced a stage nearer the cocoa we know. Note, too, that then, as up till Victorian times, both "chocolate" and "cocoa" referred to the drink. Cadbury's price list as late as 1842 shows only one brand of eating chocolate.

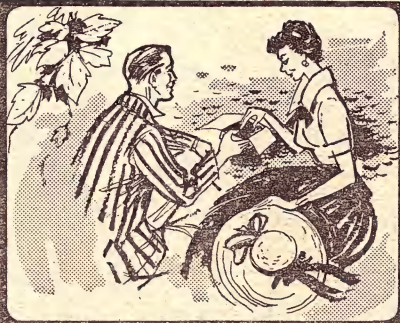


During the 18th century the cocoa drinking houses were fashionable resorts. "White's," for example, has survived as "White's" Club in St. James's Street, one of the oldest clubs in England.

So you can see that what we call cocoa and chocolate are really less than 100 years old—although the cocoa bean's usefulness was known more than four centuries ago. Samuel Pepys would be amazed at the purity and rich goodness we take for granted—imagine what Montezuma's reactions would be!



A Dutchman, in 1828, invented a method of pressing from the bean sufficient of the cocoa butter to enable the residue to be powdered. But it was not until 1866, when Cadbury's introduced their "cocoa essence," that the pure powder gained a popularity over the older drink.



Milk eating chocolate first really appeared in England in the late 1890's. A Swiss made it first in 1867 and it was Cadbury's who, some thirty years later, began its production in quantity.

This is, in brief, one aspect of the cocoa story. To assist you in your project Cadbury Fry Hudson Ltd. have compiled a project chart telling of the interesting processes involved in the manufacture of Bournville Cocoa and Cadbury's Chocolate. You can obtain a copy by writing to—

CADBURY'S PROJECT, PRIVATE BOX, DUNEDIN.

IMPORTANT—Make sure that your letter is addressed correctly, that your name and address are given clearly, that you've used current letter postage. No samples available. SPECIAL BOOKLET FOR TEACHERS OBTAINABLE ON REQUEST BY TEACHERS. Note: Cadbury's Project Chart is the same as was distributed in 1953.

GROWING
UP ON
BOURNVILLE



I stands for the Interest
that **CHILDSWEAR** take in you—
they make you smart new **GARMENTS**
and guarantee them too

**YOU CAN'T
BEAT CHILDSWEAR for
STRIKING VALUE**

THIS IS HOW IT'S MADE

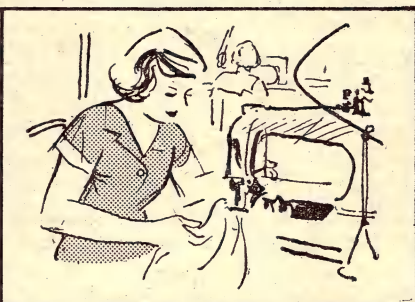
DOUBLE
SEATS



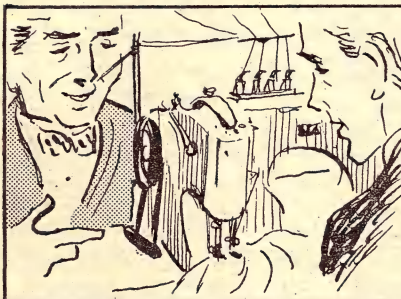
The fashionable and exclusive Childswear styles in Coats and other garments with "that tailored look," are created by a Tailor from overseas. The dainty frocks are designed by lady experts.



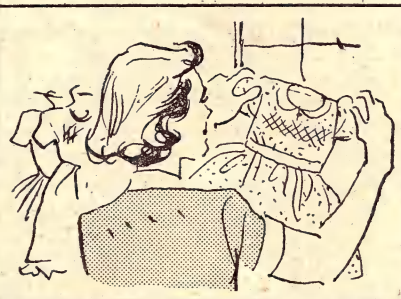
The Head Cutter turns the designer's idea into a practical working pattern; a sort of jig-saw of the many different pieces that go to make a complete Childswear garment.



Highly experienced operators, with the world's most modern machines, join the various pieces of the "jig-saw" together. The speed and skill of these girls earn them big wages and bonuses.



The machines can do almost anything but think. This is a close-up of the Twin Needle machine that puts in a double row of stitching "as quick as lightning."



Childswear **GUARANTEE** that every garment they make is perfect, so Finishers and Hand-sewers give your clothes the final touches and Inspectors then examine each garment carefully for any faults.

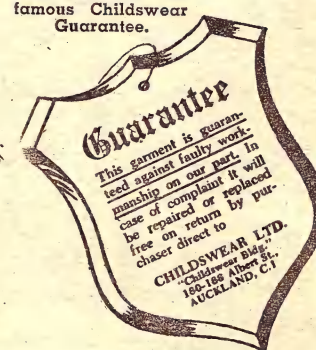


Garments like blouses and shirts are hand-ironed, coats are pressed in a big machine, but this strange "iron" steams out the creases in frocks too dainty to be pressed.



Childswear

And **THIS** is the famous Childswear Guarantee.

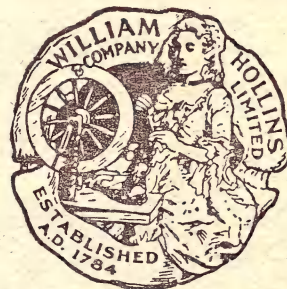


The complete range of Childswear and Teenswear garments can be examined in any good Store.

School teachers in the vicinity of Auckland are invited to bring organised parties to see the fascinating processes of manufacture at Childswear Ltd., 166 Albert Street, Auckland. Other premises at Whangarei and Te Awamutu.



J is for judgment
 The wool buyers use
 As the wool for 'VIYELLA'
 Is the best they can choose.



LET'S GO WOOL-BUYING . . . FIRST STEP IN THE STORY OF



You may already know that those wonderful unshrinkable fabrics, 'Viyella' and 'Clydella' are woven exclusively from Merino wool and long staple Egyptian cotton. But please don't think this weaving process is like a recipe — "Take so much wool and so much cotton . . ." 'Viyella' can only be made with wool and cotton of the right sort. How this wool of the right sort is obtained is what we'll now find out. Most

'Viyella'

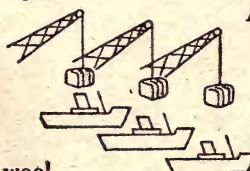
REGD



of the wool for 'Viyella' and 'Clydella' comes from Australia who alone produces more than a quarter of the world's total supply. Three quarters of the sheep are famous Merinos, and so poor is the land on some of the vast outback stations that there may be only one sheep up to every eight acres. Once a year they are shorn. The shearers go from station to station in gangs,

just as they do in New Zealand. In the shed, fleeces are classed for length, fineness and style. "Backs" and "bellies" and "stainy pieces" are separated from the fleece. Lambs are kept apart and their wool graded on its own. The wool is then baled, marked with the name of the station and sent for auction. At least most of it is.

Some farmers take a risk and ship their wool "clip" straight to London where it might fetch a higher price; though on the other hand, they might lose by it. "lots" of from one to a score or more of bales, The buyers know where the bales come from, but the quality of each "lot" are put on show. The buyers examine feel them; they might smell them — and remember, at this cleaned — so what the buyers must decide is how much clean wool



At the auction the wool is sold in each weighing about 300 lbs. from, but the quality of each

So, before the auction, samples the samples. They look at them; stage, the wool has not been each particular "lot" will yield.



1950-51 season, prices were fantastically high. One sterling in London. The total Australian all the "gold rushes" in the history of 'Viyella' people have their own team attend the world's markets. The best



Once a year the buyers visit England to receive instructions for the coming season. A certain station proved disappointing — careless work in the shearing sheds; another showed up unexpectedly well. The weather is discussed. A dry year would make for shorter, finer wool all round, a wet year for longer coarser wool. The following September, the new buying season starts.



Suppose a buyer will pay 100 pence a pound for clean wool of a certain kind. If he thinks the yield from one lot will be 50 per cent, or half, he will pay 50 pence a pound for it; if only 40 per cent, so only 40 pence. In the sale room or chambers, a lot comes up and the auctioneer takes bids and sells at the rate of six or seven lots each minute. In a terrific babble of noise as each buyer tries to get his bid in, the price goes up, up! The hammer falls! The farmer has his price; the buyer has his wool. During the pound of wool, reached more than £1 clip earned £A636 million; more than the country. William Hollins, the of wool experts, and each year they wool they can buy is sent home to England.



HELP
 FOR
 YOUR
 PROJECT

What happens to the wool in the 'Viyella' works? Well, the story of how it is treated and combined with the long staple Egyptian cotton; and the rest of the most intriguing 'Viyella' story is told in a special FREE booklet. For a project like "Wool — From The Raw Product To The Finished Garment" this booklet would be a great help. For your copy send your name and address to PROJECT, H. PETTIT LTD., P.O. BOX 1440, WELLINGTON.

'VIYELLA' BABY BOOK. To get this excellent book of patterns and ideas, send your name and address with 3d. in stamps to H. PETTIT LTD., Dept. T.A. P.O. Box 1440, Wellington.

RADIO and SCHOOL

(Contributed by the Education Department, Wellington, N.Z.)



LISTENING IN

THERE are two important reasons for making special radio broadcasts to schools. One is that radio is now part of everyday experiences and in drawing it into their service, the schools are bringing in something that is part of home life today; and, furthermore, apart from what children learn in the process, the school broadcast gives them what is probably their first experience of listening under guidance. The school that uses radio broadcasts has a chance of doing something to train the pupils' power of selection and, incidentally, their power to concentrate on what is spoken.

Secondly, radio can make a definite contribution to the significance and vitality of school learning. The radio can present material in ways that are not possible in the classroom.

For its impact on the schools to be vital, radio depends considerably on the teacher. The teacher is fully informed about the school broadcasts before the beginning of the school year. He can thus select and incorporate topics that suit the work he has planned. Before the actual broadcast the class is prepared, and afterwards the broadcast is followed up. The broadcast is, so to speak, the central part of a lesson.

Both preparation and "follow up" are most important, and they will vary with the nature of the broadcast. To help with this preparation and "follow up," special booklets are issued to schools that take the broadcasts. Some are for teachers only telling what

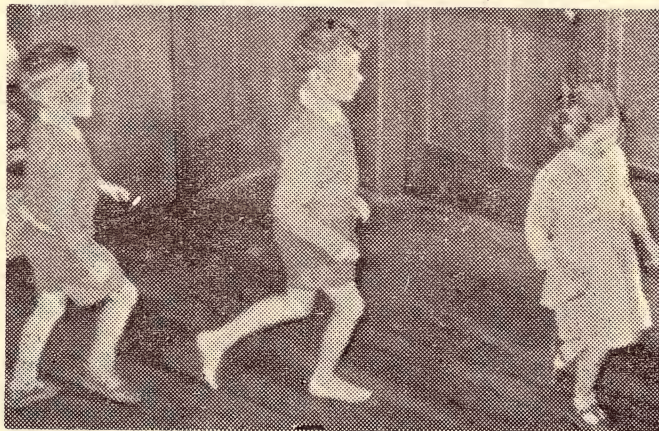
exercises will be taken in the rhythm programmes, what melodies will be used, and what stories will be narrated in the story-time period. For older pupils the booklets are different. They are issued to the children themselves, and have notes about the literature, science, social studies, and music appreciation programmes that are broadcast.

Apart from the study of the booklets, other preparation is necessary. For instance, there may be some revision of earlier lessons; words, phrases and facts that are known to be coming in the broadcast are put up on the black-board, place names found in atlases, and so on. Similarly, "follow up" means additional work for teacher and

class. Sometimes it is no more than a brief resume of the broadcast immediately afterwards. Such a summary is almost always considered necessary or valuable even though the best part of the "follow up" consists of more ambitious work, days or even weeks later. Sometimes it involves the making of large scrapbooks, of charts, or of friezes. Many schools collect the books suggested or see filmstrips which are directly related to the broadcast. Dramatization is a popular activity that springs from the broadcasts. Some children write their own stories and poems.

In arranging the school broadcasts for the year, a team of people work together. The subjects to be broadcast are selected after the teachers have been consulted. They are, of course, subjects that bear directly on the official syllabuses. A specialist prepares the material. It must be put over "in a radio way," and the best way to do this is decided. If it is a radio dramatization, the specialist will work with a script-writer, and together they will produce a radio play. The play is then typed, so that there will be a copy for each character required. It is then sent to the radio producer, who selects his cast. Finally the play is produced and recorded. It goes "on the air" and is listened to by thousands of girls and boys. Teachers and pupils listening in schools that are previously selected, report on the programme, and their criticisms and comments help in preparing other programmes.

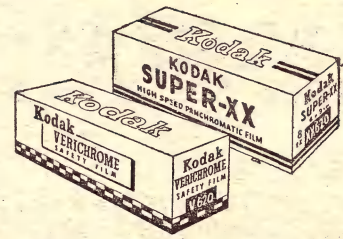
(Continued on page 22)



RADIO AND RHYTHM

HELP YOUR SCHOOL TO WIN A PRIZE. SEE "GIFTS TO SCHOOLS," PAGE 38.

K is for KODAK
 The name that you'll find
 On FILMS and on CAMERAS
 The best of their kind



Some famous firsts in— PHOTOGRAPHY

YOU press a button. There is a click. Another photograph has been born. Photography today is as simple as that! But it wasn't always so. The development of photography from uncertain beginnings to its present-day popularity and high degree of efficiency is an interesting story and would make an excellent competition entry.

For a free, helpful booklet, "The Story of Photography," write to Kodak New Zealand Ltd., P.O. Box 1095, Wellington.

Photography's story starts with the discovery in the 16th century that silver nitrate and other silver compounds are sensitive to light. It is not until 300 years later, however, that experiments are made and shadowy images obtained on paper treated with silver nitrate. Later, in 1839, two Frenchmen, Daguerre and Niepce, began to make what are called Daguerreotypes.



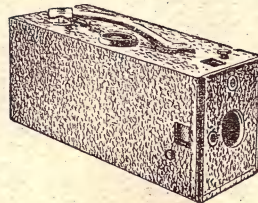
● A typical Daguerreotype of the year 1854.

These were images made on sensitised copper plates. Although these were crude compared with the photographs of today, it was the start of photography in earnest.

Great improvements were made in 1844 by an Englishman, H. Fox Talbot, who used sensitised paper to produce negatives and prints (as is done today, but, of course, in a much more effective way). Fox Talbot's system was the prototype of modern photography.

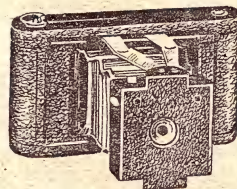
Another forward step was made in 1851 when glass was first used for making negatives. These

"plates," as they are called, were much better than paper and are still used for certain photographs even now. Even with the new "plates," photography was still a complicated procedure and it was not until George Eastman, the founder of the Kodak Company, invented the first successful commercial form of roll film that it first began to be practical for everybody to take "snapshots." Eastman made further improvements and in 1889 produced a transparent and flexible celluloid roll film. This is the basis of the roll film we know today and which you use in your "Brownie" camera.

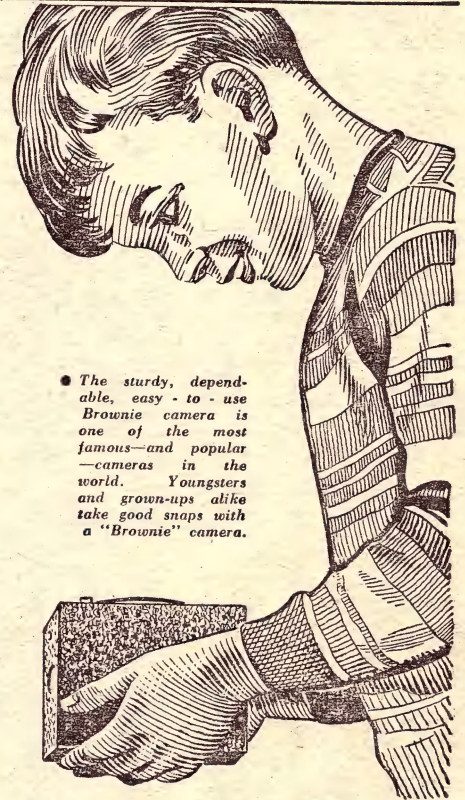


● A Kodak camera of the year 1890. A camera like this was used by Peary on his Polar Expedition.

The new roll film made possible a new kind of camera. This was the first of the famous Kodak cameras. It appeared in 1888 and was supplied loaded with film for 100 pictures, which were round in shape. When you had taken all your pictures, you sent the camera back to the Kodak Factory where the film was developed, and if the sun was shining, prints were made. The camera was then reloaded with film and returned to you.



● The ancestor of all amateur-size folding cameras—the "Folding Pocket" Kodak No. 1—introduced 1898.



● The sturdy, dependable, easy-to-use Brownie camera is one of the most famous—and popular—cameras in the world. Youngsters and grown-ups alike take good snaps with a "Brownie" camera.

In 1895, Kodak introduced the first "pocket" camera. This took 12 pictures measuring 1½ in. x 2 in.

The year 1898 saw the first of all amateur size folding cameras—yet another Kodak contribution to photography—and in 1900, Kodak introduced the first of the famous "Brownie" cameras, a favourite camera of boys and girls (and grown-ups, too) the world over.

Since those early days of photographic achievement, Kodak have continued to play a leading role in the world of photography and today the name "KODAK" stands supreme, representing the very finest in films, cameras and photographic equipment for amateur and professional, business, industrial, scientific and medical use.

P.S.—Don't forget to write in for your free booklet, "The Story of Photography," to help you with your competition entry.

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CINEMA and THEATRE

By RUSSELL REID

A short time ago I "shouted" two youngsters, Nick and Alison, who live next door to me, to the theatre. They went to see a performance of Shakespeare's "As You Like It," by the Shakespeare Memorial Theatre Company, which was touring New Zealand. I wondered what they would think of it because I'd already seen the play and, for that matter, a large number of plays. I particularly like the theatre and never miss an opportunity of seeing a play whenever I can. They came home and wandered over to my place. "How did you like it?" I asked.

"We loved it!" said Alison.

"It was great," said Nick.

WE began discussing what they had seen. It wasn't the first play they had ever seen on the stage, but they thought it was the best, probably because they hadn't before seen such a good company of actors. But I noticed that Nick seemed to have something bothering him. At last he came out with it.

"Some of the other fellows at the school," he said, "went, too, and they didn't all like it. Some of them said they'd sooner go to the pictures."

"Of course they would," I said. "That's because they're more used to seeing films; but there's a big difference between the films and the stage, you know."

"Don't you like pictures?" asked Alison, and I spent some time pointing out that I do. As a matter of fact there's nothing I like more than good films, and I rather surprised the two of them by saying that I particularly like a good "Western."

We nearly started on a long discussion of "Westerns" then and there, but I wanted to get back to what had been bothering Nick—why some of his pals hadn't liked the play as much as a film. We went at it for some time and here are some of the points we made about the differences between the cinema and the theatre.

For one thing, the cinema's something more mechanical. No matter how good the actors are, or how exciting the film is, it's still something that's produced by mechanical means and it's always the same. Whatever night you go to see a particular film, or whether you go one afternoon and the same night to the same film, it's still exactly the same. Now, this isn't



PRIMARY BOYS ACTING PETER PAN.

so with a play, although the players try to make it so far as they can.

"That's because they're real people right there before us," said Nick.

"Exactly," I replied, and went on to point out that once the actor starts to act in front of us on the stage he can't go back . . . he has to be sure he's convincing us that he's a villain or a hero all the time. The film actor on the other hand can try playing any scene again and again. Each is filmed and then only the one which someone else thinks the best is put into the film.

"Then," said Nick, "the actor on the stage has the much harder job." He has, although, being a film actor isn't easy either. But what the film actor doesn't have is an audience in front of him all the time he's acting. An audience helps the actor on the stage and also presents him with a problem.

"I don't see how it can do that," said Alison, "both help him and give

him a problem at the same time."

"Neither do I," said Nick.

The point they were both missing was the fact that the audience before which the actor on the stage appears is never quite the same. It's different every night he plays because it's made up of different people every night. They may be nearly much the same people, but they are never exactly the same. As a result he has to alter his acting, slightly sometimes, sometimes very much, in order to convince them thoroughly that he is whoever he is supposed to be. The tricky part for the actor on the stage is to sense, because there's no other way of telling, just what kind of an audience it is the moment he steps on the stage every night. That's

one of the most difficult, if not the most difficult, of the finer points of stage acting. He hasn't much to help him either, only the costume he wears and the scenery around him, whereas the actor on the screen has a number of mechanical things to help him.

"Such as what?" asked Nick.

"Well," I said, "in the first place, the camera which photographs him can help him. If he wants us to see quite clearly that he is ill, for instance, and that his face is pale and haggard, the camera, by filming just his face, can show us close up what he looks like. But on the stage, just by acting, he has to be able to convey the same idea to us when we may be a long way from him at the back of the theatre. Then again, when the actor on the screen whispers quietly to someone else, the recording of his voice can be so altered that although he may sound as if he is whispering,

(Continued on page 22)

L

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POINT-SETTER is the name
It's everybody's favourite
The SHIRT of greatest fame*



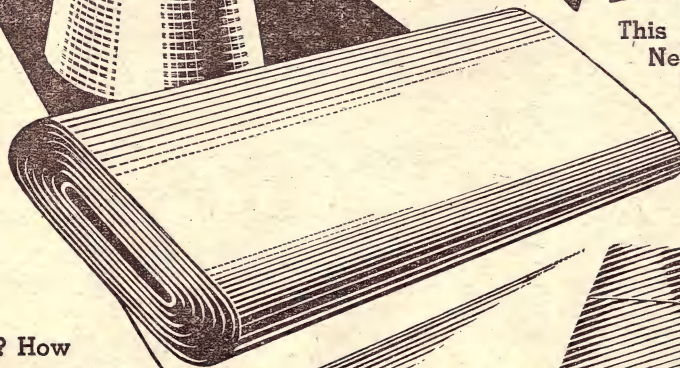
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What is cotton? How does it grow? What are the many processes that enable us to get fine materials from a small, fluffy flower? These, and countless other interesting questions, are answered in the attractive, fully illustrated Booklet available to you from Lichfield (N.Z.) Ltd. Step by step it takes you through each stage from the time the seed is planted to the completion of a lovely Lichfield shirt. Even actual samples of high-grade poplin material are included for your close examination. Make sure that you get this fascinating new book designed to help you in your project work.



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BOOKLET TELLING...

"THE TALE OF A SHIRT"

LICHFIELD PROJECT, BOX 386, CHRISTCHURCH.

CINEMA and THEATRE

(Continued from page 20)

we in the audience can all hear him quite clearly. The actor on the stage has to be able to convey to us that he is whispering and yet, at the same time, make sure that we can all hear him, too, but he has no loudspeakers behind the scene to help him, as there are in the cinema. He has to do it all by his own skill.

"You said just now," said Alison, "that the actor on the stage had only the scenery around him to help him. So has the actor on the screen, hasn't he?"

"There," I said, "I think you've put your finger on the very point, or one, at least, which made some of Nick's friends say they'd sooner see a film than a play. In the films the actor is usually surrounded by scenery that appears to us real because it is real. Take, for instance, the forest you saw in 'As You Like It.' In a film of the same story it's very likely that the forest would have been a real forest. Now, years ago, when the same play was presented on the stage, the company used to try to put a real forest on the stage. But experience taught them that this didn't always convince the audience that it was a forest at all, so nowadays in the theatre, the scenery usually just suggests what it is supposed to be, and it's left to the audience to add the scenery, as it were, by using their imaginations. That's where the film and the theatre really differ. On the screen we are more often than not, shown everything. In the theatre we in the audience are expected to supply some of the scene for ourselves by using our imagination. When we go to the cinema and see and hear a man tell us he is standing in the middle of a forest we are usually shown the forest quite clearly. In the theatre, however, there is just enough scenery to suggest the forest, and we have to supply the rest of the forest from our own minds. Once upon a time there wasn't even any scenery on the stage at all to help the audience, and the playwright himself, by inserting words describing the scene into the speeches of the players, told the audience what scenery was surrounding the actor."

We then began to think of speeches in some of Shakespeare's plays where the player was really telling us in the audience what the scene of the play

was, and I was able to give Nick and Alison some other speeches from plays by other playwrights of Shakespeare's time in which they were doing the same thing. We decided then that scenery wasn't altogether necessary in the theatre, but what was necessary was that the audience should use their imaginations.

"In fact," Nick summed it up, "the audience is part of a play."

"And in the cinema," added Alison, "they just sit and look and listen."

That was putting it rather badly, and there's still a lot more to it than that, I pointed out.

One of the differences between the cinema and the theatre is that the

long. Then again, when the cinema developed from just being silent films to talking films, people thought that the "live" theatre, the theatre where actors of flesh and blood appeared before the audience, would die out. But it didn't. In fact, in recent years it has developed more strongly than ever before. We in New Zealand are not as fortunate as those in many other countries where the theatres are filled by audiences seeing plays on the stage almost every night of the week all the year round. In England, for instance, millions of people see plays every week and there are hundreds of theatres in which plays are performed every night of the week except Sunday.

"Going to the theatre," I said, "is something different from just going to see a film. There's something about a theatre with a company of live actors in it that's more exciting, and once you've had a real taste of seeing plays on the stage well performed, you'll find you want to go again and again. There's always, for me, a thrilling moment in a theatre—that's when the lights go down, the footlights start to glow and the curtain shakes and then rises slowly. Once you've grown to like the theatre, that's a moment you always look forward to."

"Wait a moment," said Nick, "what about these 3-D films, don't they give you the same thing as the stage? Don't they give you the same feeling that the actors are live and right there in front of you?"

"But it's still a mechanical film," said Alison.

"Yes," I smiled. (One point seemed to have gone home to Alison, anyway). They're still mechanical films, and another thing—because they've three dimensions, because they have breadth and height and depth, don't forget the stage has always had these."



HIGH SCHOOL GIRLS ACTING "PRIDE AND PREJUDICE."

theatre is itself far older than the cinema. The cinema, in fact, grew out of the theatre, but it has never outgrown the theatre. The theatre has always existed in some form or another. Nothing has ever stopped it. Oliver Cromwell once tried to stop the theatre by closing all the theatres in England down, but that didn't last for

RADIO AND SCHOOL

(Continued from page 18)

The "listening end" is the test; and the variation in the method of attack is conditioned not only by the material used, but also by the age of the listeners. Small children delight in activity and the specialists in programmes for that age group use the "story" approach as much as possible.

Listening conditions in a school are different from listening conditions at home, and trying out school pro-

grammes before making a series is essential to their success. This is constantly done and is of the greatest help in producing good series. Radio programmes for schools are frequently listened to and enjoyed by adults. The value of parents listening to and discussing these programmes with their children cannot be too greatly emphasized. It is another link between home and school.

M for MARVELLOUS "wall-colour" shades
DULUX alone can give;
In Satin Finish or Sparkling Gloss,
These modern colours live.



Can a room change its shape?

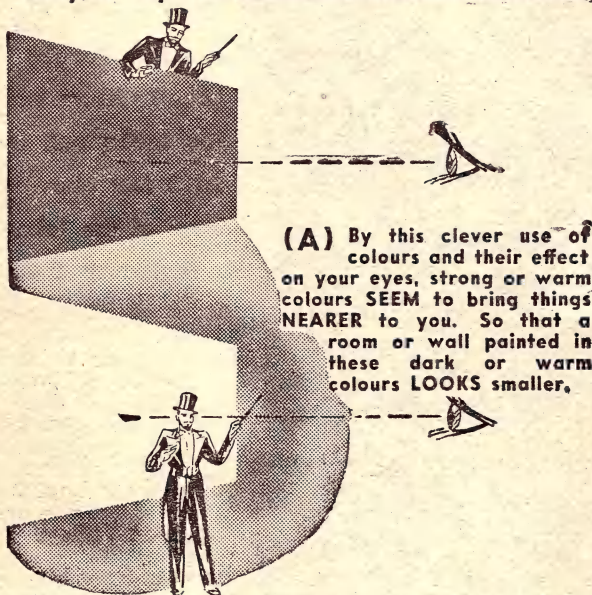
YES

Or, more correctly, it appears to the eye to change its shape if it is painted in certain colours which will give this magic effect.

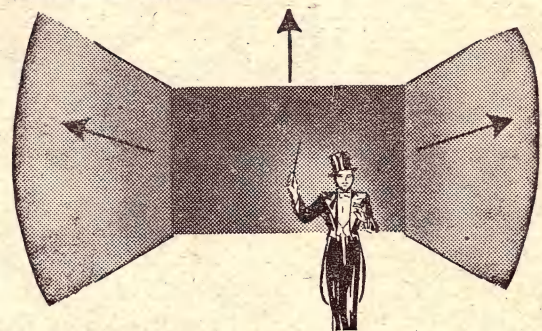
In earlier issues of the "Alphabet" we have told you how colours are obtained in the making of "Dulux," and also how these colours are used in many different ways, not only to improve the APPEARANCE of almost

everything you see every day, but also to improve your health and happiness by the correct use of these colours for the decoration of rooms.

Now there is another important use made of "Dulux" colours by decorators, and that is to correct and improve the shape of rooms and passage-ways or other badly proportioned rooms in the home.



(A) By this clever use of colours and their effect on your eyes, strong or warm colours SEEM to bring things NEARER to you. So that a room or wall painted in these dark or warm colours LOOKS smaller,



HOW TO ALTER A LONG NARROW ROOM

This is a very interesting experiment with colours, as it shows the remarkable effects of both strong and light colours in the ONE ROOM. The long, narrow room can be made to seem LESS long and narrow by painting the small end walls a warm or strong colour, such as Deep Orchid, Deep Jade or Fiesta Yellow. That will bring it CLOSER to the eyes, thus lessening its far-away effect. Then the long sides should be painted cool or light colours, such as Ivory, Pastel Green, Pastel Blue or Primrose to send them further AWAY from the eye, thus lessening their narrowing effect on the room. So that, if the narrow end is brought nearer (to the eye) by strong colours and the sides pushed further out by seeming to send them away, the room will look "squarer" (to the eye).

(B) Cool or light colours, on the other hand, tend to send things further AWAY from your eyes, thus making a room or wall SEEM larger. Colour "Plays tricks" on your eyes!



Wall Colours

FOR INTERIOR DECORATION
—are available in
• SATIN FINISH
and GLOSS

COLOUR VALUES



STRONG OR WARM COLOURS

WEDGWOOD BLUE, DEEP JADE, FIESTA YELLOW, GREY, DEEP ORCHID.



LIGHT OR COOL COLOURS

PASTEL GREEN, PASTEL BLUE, OFF WHITE, IVORY, PRIMROSE.

FREE!

Send your name and address to "PROJECT," BOX 90, LOWER HUTT, for the illustrated booklet "Paint Facts" to help you in your paint project



— FORESTS —

FIRE FIGHTING IN ACTION

(Contributed by the New Zealand Forest Service)

Last year, the Forest Service published an article in the New Zealand Trades Alphabet on forest fire fighting, showing the measures the Service must take against its greatest enemy, fire. This year the photographs show you actual fires in operation, and how they were fought. Despite every precaution, fires sometimes break out, and then all the available fire fighting resources must be brought to bear on them. The signs are that this is going to be a good summer. So when you are enjoying the sun this year, on picnics or in camps, remember that our forests are at the mercy of a careless action with matches or a fire left smouldering. Don't play with fire!



View of the heavily wooded banks of Lake Te Anau, where fire broke out, over 1,100 feet above the level of the lake, in February, 1953.



Fire fighting in the Eglinton Valley. The man in front is carrying a gas tank, the second man carries a length of suction hose. The fourth man bears a water carrier, and the last a Paramount pump.

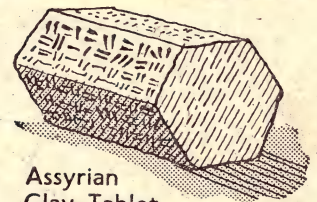


(Continued on page 26)

REMEMBER THE CLOSING DATE FOR SENDING YOUR COMPETITION ENTRIES—15th OCTOBER.

N

stands for NEATER,
Writing you'll find,
On good "CROXLEY" ENVELOPES
In verse or in rhyme.



Assyrian
Clay Tablet

THE
STORY OF
PAPER

THE
STORY OF
THE
ENVELOPE

THE
STORY OF
PRINTING

No 4

THE STORY OF BOOKBINDING

For many decades Croxley factories have manufactured books, school books, office books, loose-leaf binders-in fact books for almost every businessman-whatever his calling.

MAKING a book is good fun on a rainy day or any day as a matter of fact. Also the books made at home can be really useful. The making of books starts back almost at the beginning of history. The early books were very different from what we have to-day. Probably you would not call them books, but they were used in the same way that we use our books for recording thoughts and events and also for the pleasure of reading the thoughts of others.

In earliest times these books were pieces of stone or tablets of clay on which men drew pictures which told stories almost as clearly as our written words do today.

The making of a book as we know it to-day is the result of slow growth over thousands of years. Strange as it may seem, wealthy men in ancient times had libraries just as we have to-day, but their books were slabs or cylinders of baked clay. There were also librarians in charge of these books. In the British Museum many books from these very libraries are to be seen. In Bible times these libraries were called Houses of the Rolls and the library attendant the Keeper of the Rolls. In the booklet "The Story of Bookbinding", you may read the fascinating story of the development of the art of making books. It also has simple directions for the making of a real book.

the book
really us
The ma
almost
tory.
differ
day.
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used
our
and
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Write now for FREE BOOKLET
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Teachers - Modern 16mm. sound films "The Story of the Envelope" and "The Story of Bookbinding" are available. Applications must have Headmasters signature as well as name and address of school.

One of the earliest books took the form of Parchment attached to wooden rollers.

FOREST FIRE-FIGHTING

(Continued from page 24)



Fire fighting party crossing Lake Te Anau to the scene of the fire referred to in photograph 1.



Heavy pumping unit relaying water from Lake Te Anau to the reservoir for the Paramount pump.



The fire here is 1,100 feet above the level of the lake, and shows the Paramount pump in operation.



A Forest Service officer taking weather readings. This is one of the most important measures that the Forest Service can take to avoid fires. By these means, it is possible to predict fire hazards very accurately, and in forest fires as in all else, to be forewarned, is to be forearmed.

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Drink a cupful each night

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**MOUNT
EVEREST**

The whole world thrilled to know that at last, mighty Chomolungma, or Mount Everest, had been conquered by Colonel Sir John Hunt's 1953 Expedition. Since the 1920's, efforts to climb this, the world's highest mountain, have formed an epic story of British pluck and endurance. Irvine and Mallory of the ill-fated 1924 Expedition might have reached the top. No one knows. When last seen, they were within a few hundred feet of the summit before swirling mists hid them for ever. But now, a fellow New Zealander, Sir Edmund Hillary, and the Sherpa, Tensing had at last stood on the very top. What a thrilling moment. But imagine the terrific strain, on mind and body there must have been, in this wonderful achievement! The makers of 'Ovaltine' offer their sincere congratulations on this epic feat and take pride in the fact that once again 'Ovaltine' played its part in a remarkable achievement. 'Ovaltine' was the regular food beverage of the Expedition, providing them with nourishment of the most valuable kind—as it did also for the 1933 and 1936 Expeditions, the 1951 Reconnaissance Party and the 1951 New Zealand Himalayan Expedition.

ALL BLACKS



There's no one who wouldn't like to be an All Black and wear the Silver Fern Jersey for New Zealand. But there's more to it than just the honour and glory of belonging to one of the world's greatest teams! You must be as 'hard as nails'—in perfect physical and mental condition to take the knocks and the opportunities that come your way. It's a grand honour to be an All Black all right, but you must be good—and that means as fit, mentally and physically, as you can possibly be. For instance, on the English tour the All Blacks played twice a week for five months under all conditions. Only the fit and strong could keep that up. For this reason, an important passenger with travelling All Black teams has been delicious 'Ovaltine.' Yes, this great food beverage went to South Africa with the 1949 All Blacks and is being used by the 1953-54 All Black side on tour in England.

OLYMPIC GAMES



Making records of another kind on the athletic field is a supremely exacting test of personal ability and fitness. A 100 metres sprint, finished in just a little more than 10 seconds, is all a sprinter has to show for months and even years of unselfish training. As you can understand an effort like that demands the peak of physical condition; and whether in the Olympic arena, or climbing Everest, nourishment of the right kind is again vital to bringing it about. And with the standard in all sport getting higher and higher each year, so this physical and mental fitness becomes more and more important. In this respect, it says much again for delicious 'Ovaltine' that it was served to Athletes at the Olympic Games of Los Angeles, 1932; Berlin, 1936; London, 1948; and Helsinki, 1952; and was the official beverage for the Empire Games, Auckland, 1950.

WRITE FOR FREE BOOKLET

Boys and girls. Find out what it is that makes 'Ovaltine' so good for building up body, brain and nerves, and learn some interesting facts about its manufacture and constituents for your project



by getting the FREE 'Ovaltine' booklet. Just write with your name and address to:

'OVALTINE'

A. WANDER LTD., NORTH ROAD, PAPANUI, CHRISTCHURCH.

IN THE ORIGINAL FLAVOURED 'OVALTINE' OR THE NEW CHOCOLATE FLAVOUR

Air Freight Across Cook Strait

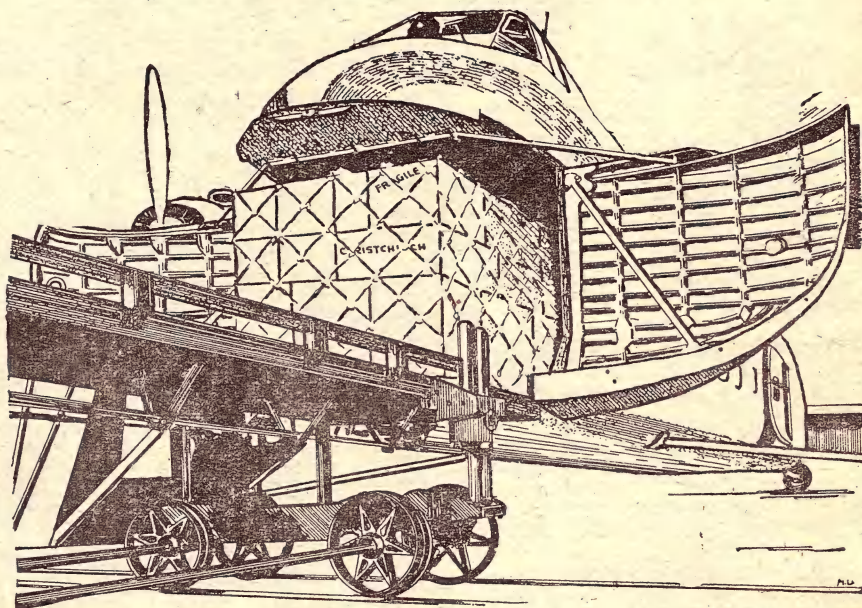
(Contributed by the Civil Aviation Department)

No doubt many of you have, at one time or another, been down to the wharves at some port in either the North or South Island, and have seen the little coastal ships being filled with cargo to take across Cook Strait to Wellington, or maybe Nelson or Picton. Until a few years ago all of the cargo carried between the islands of New Zealand was carried in the holds of these small coasters.

TODAY, much of the freight that arrives in Wellington or Christchurch, or other towns in New Zealand, has been brought at least part of the way by air across Cook Strait. From Paraparaumu aerodrome near Wellington, and Woodbourne aerodrome near Blenheim, several times a day, six days a week, the big, ugly, lumbering Bristol Freighter aeroplanes of Straits Air Freight Express Limited, come flying across Cook Strait with loads of up to six tons of cargo aboard each flight. Six tons, that is about the same as the load that two ordinary motor trucks can carry. All kinds of cargo are flown across the Straits by plane—ice cream cones, fruit, furniture, different kinds of foodstuffs, ladies' clothes, washing machines and car parts, are only some of the many items which every day are placed aboard the Bristol Freighters to be carried from one island to the other. These big planes in one month can lift as much as 1400 tons of cargo, about as much as two coastal ships will carry in one voyage, but can carry the cargo so much more quickly between the South and North Island.

The New Zealand Railways found the need for a quick method of transport between Wellington and Christchurch, so they asked the Royal New Zealand Air Force (which at the time, 1947, had the only planes in New Zealand that could do the job) to carry some of the cargo by air. The Air Force did so for a while, then handed over to the New Zealand National Airways Corporation, and Straits Air-Freight Express Limited took over from N.A.C. in 1951.

With air freight there is no need for cranes, wharves and numbers of men for loading and unloading. All the cargo that is carried between the North and South Islands, between Paraparaumu and Woodbourne by the Bristol Freighters needs only one or two men to do any handling which is necessary. Instead of cranes, the Bristol Freighter aeroplanes are loaded or unloaded by means of the "Cargon" system, which does the job much more quickly than men could. If you will look at the



THE "CARGON" SYSTEM

picture you will get an idea of how the "Cargon" system works. The air cargo is put on to big wooden trays, which have small wheels on the bottom of them, before being placed on the motor truck which will take the cargo to the aerodrome. These trays are called "Cargons" and take the place of the floor of the Bristol Freighter. The floor in the Freighter has been taken out so that the "Cargons" can be wheeled in.

At the aerodrome, the truck stops at one end of two lines of railway tracks in the ground and a "traverser" is moved in right behind the truck so that the airfreight or cargo can be moved on to it. From the picture you can see that the "traverser" is like a stretched out railway wagon which moves sideways along the track like a crab. The Bristol Freighter has two big doors in its nose which open outwards like those of a barn. The "traverser" moves along the rails and stops in front of the open doors of the plane. The "Cargons" are slid into place inside the Bristol Freighters by means of a winch. Once inside, the cargo is tied down, the nose doors are closed and the Bristol Freighter's engines are started up. Within a few minutes after the air freight is aboard, the plane is taxiing down to the end of the runway of the aerodrome.

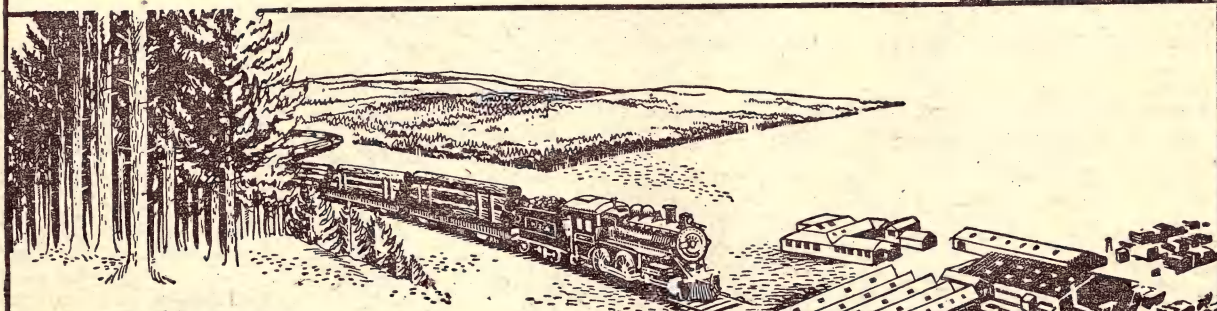
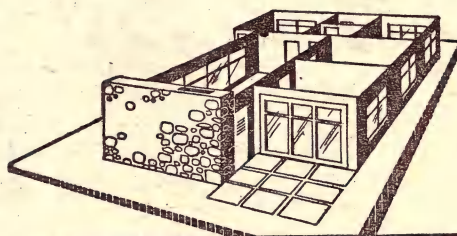
The trip across Cook Strait takes only about 35 minutes, and when the

Freighter arrives at the other aerodrome it taxis to be unloaded with the help of a "traverser" running along rails exactly like the one which loaded the Freighter. After the cargo has been taken out of the Bristol Freighter the "traverser" moves along rails with the cargo aboard, and its load is placed upon a motor truck. The truck then leaves the aerodrome with the cargo, which is taken to a railway freight shed to be sent finally by rail to the different places to which it is addressed. So on the next occasion when you hear the steady roar of its engines and look up to see its clumsy looking shape plodding through the sky, remember that the Bristol Freighter with its load of cargo is helping to make life easier and smoother for all of us, by carrying goods which we can use for everyday life, faster than by any other means of transport, and thus getting these items into our homes so much more quickly.

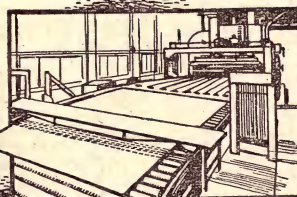
CAUTION!

1. Practical jokes can lead to serious injury. Never pull a chair away when a person is about to sit down on it. An injured spine may leave him a cripple for life.
2. Do not DARE anyone to do something that is dangerous. By doing so you may be the cause of a serious accident.

P stands for PINEX
It's made out of trees!
For walls and fine ceilings
In houses that please!

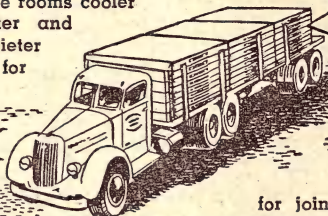
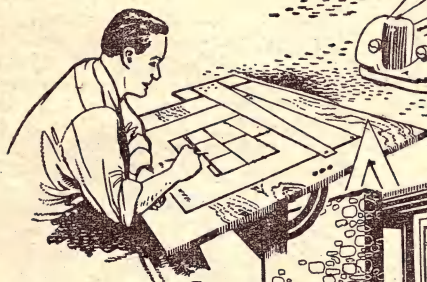


TIMBER! cries the bushman, in warning . . . c-r-a-s-h!! . . . Another pine tree is on its way. Soon, it has left the forest behind and is speeding by road to the big Sawmill at Kinleith in South Waikato. Here, the logs are sawn into building and case timbers, and the outside portion of the logs, usually called slabs, are turned into chips and railed to the Wallboard factory at Penrose, near Auckland, where they are pulped by special pulping machines. The pulp passes to a "forming" machine which gets its name because it forms the pulp into an unbroken sheet of wet board. This passes through a press with large rollers, which extracts most of the water and as the damp board moves slowly along an automatic circular saw cuts it into large sheets of standard size ready for drying. It takes 1½ hours to dry a sheet of Pinex Insulating Board and this is done in a huge oven through which the sheets move at an average temperature of 315 degrees. Pinex Hardboard is also formed on this huge machine and, after passing through the same process as Insulating Board is transferred to a giant press, which is capable of pressing six sheets at a time. These sheets are pressed to required sizes of either ½ in., 3/16 in. or ¼ in. thick. Architects are constantly planning homes, theatres, warehouses, etc., in the building of which Pinex Hardboards play an important part. Pinex Insulating Board helps to make rooms cooler in summer and warmer in winter and absorb noises, making rooms quieter always. Pinex Hardboard is noted for



its hard, dense durable surface, and its light weight and strength and

finds many uses in building construction as wall and ceiling linings and for joinery and cabinet work. Pinex Insulating Board is also made up into decorative mouldings, decorative tiles with carved design, also Acoustic tiles for insulating purposes, reducing the echoes in theatres and halls and absorbing noises in factories and workrooms.

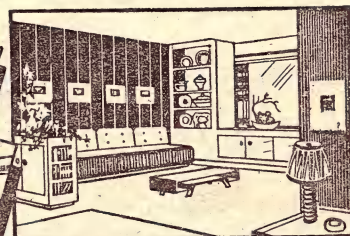


Learn more about how PINEX products are made . . . write to "PINEX," C/o N.Z. Forest Products, Auckland.
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PRIVATE BAG

AUCKLAND



CYCLISTS!

BEWARE!

(By the Minister for Transport, Wellington)

Accidents to cyclists are increasing every year. Some are fortunate and have only minor injuries; others are seriously hurt, and others again lose their lives. Why are there so many cyclist casualties?

CYCLES do not take up much room on the road, yet the riders are knocked down in hundreds every year. Why is this? Chiefly because cyclists do not have eyes in the back of their heads and forget to look behind before they change their line of travel; that is, before they move over towards the centre of the road to overtake, or when turning across the road towards a shop or gateway, or when they make a right hand turn at a corner. As soon as the cyclist moves ever so slightly to the right he is in danger of being run down from behind by overtaking vehicles. Cyclists must guard against the menace from the rear. This habit of looking behind would save many a life and limb if it were more general.

Double-banking has caused several accidents already this year. The extra weight of the passenger increases the stopping distance, with the result that the rider of the cycle has run into a vehicle ahead which has either slowed down at an intersection or commenced to make a right-hand turn. The passenger riding on the bar also restricts the control of the steering, and cases have occurred where the rider has swerved across and been knocked down by vehicles approaching towards them or coming up from behind. It is sometimes hard to refuse giving a friend a lift on your cycle, but you are risking danger to him as well as to yourself if you consent. There are far too many accidents caused through double-banking.

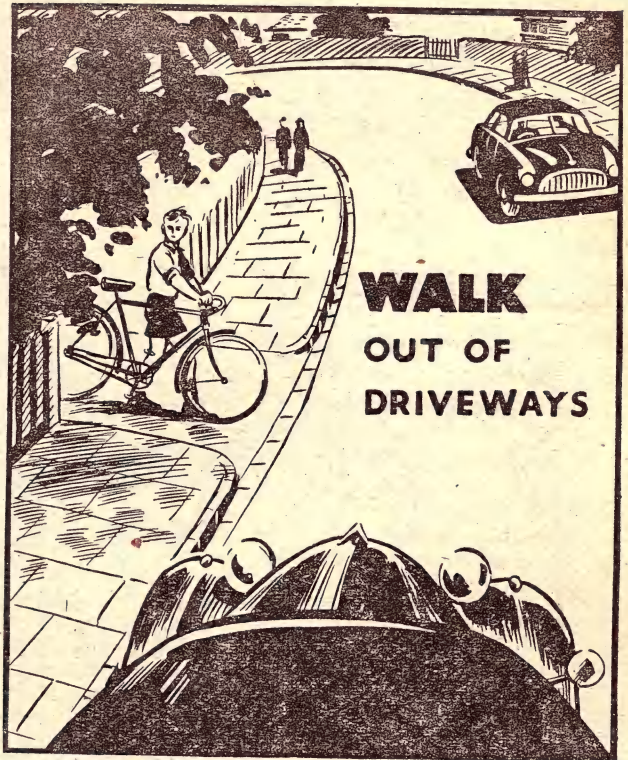
Riding cycles out of gateways and private driveways is another frequent cause of accidents. The riders have been obscured from view until they suddenly emerged on to the road just as a car or truck was approaching from the right. Don't be lazy. Walk out with your cycle on to the roadway.

Riding with the head down prevents the rider from seeing what is ahead and quite a number of cyclists riding in this fashion have run into the back of stationary or slow-moving vehicles. One frequent result of the collisions that occur is severe injury to the head and especially to the face. A life-long disfigurement to the face is a high price to pay for not keeping a strict watch ahead.

Remember this when a head wind or driving rain makes you tend to drop your head.

Cyclists in a hurry often approach a corner too fast and run into a vehicle crossing from the right. They have even run into a car from the left which has tried to stop to give the cyclist the right of way. Speed at intersections is simply asking for trouble. Speed down hill, or with a wind behind you, also lengthens your stopping distance as many a cyclist has found out to his cost by being unable to pull up in time to avoid a collision.

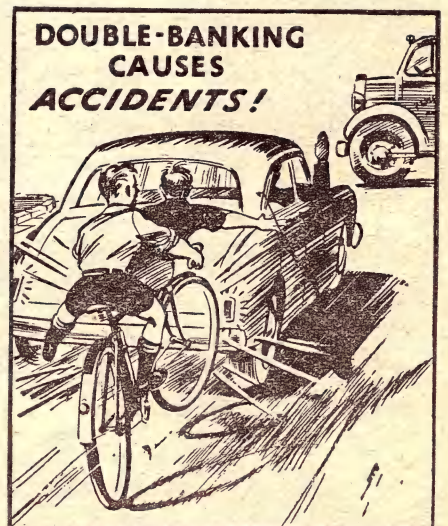
Be particularly careful when approaching a factory entrance, or right of way, or private driveway on your left. Vehicles ahead have turned in to these entrances and the cyclist behind has run into them with fatal



results sometimes. Similar accidents have been caused through cyclists creeping up on the left of slow moving traffic near a corner. A car or truck turns left and the cyclist is forced against the kerb or a post.

Do not rely on drivers always doing the right thing. Several cyclists have collided with opening doors of parked cars, and these doors can inflict painful injuries to the face. Avoid riding too close to parked cars. Oncoming vehicles, too, have been known to make a right-hand turn across the path of an approaching cyclist. Although

(Continued on page 38)





is for Quest
For a breakfast that's Quick
Combines goodness and Quality—
WEET-BIX is the trick



WHEAT is the most important and widely grown of all agricultural crops. In ancient times, only a few types of wheat were known but the scientific study of such factors as soil, geography, climate and heredity have led to the development of more than 1,000 varieties. Here are some of the many forms in which man makes use of this versatile food...

BREAD



Triticum vulgare (bread wheat) is the most intensively cultivated strain of all, because it can be milled into high quality flour. Bread wheat, which was grown in prehistoric times, is very adaptable to climatic conditions.

MAIN DISHES



Triticum durum (macaroni wheat) is especially popular in the Mediterranean countries. It will grow in a hot climate with as little as 10 inches of rainfall per year. The hard, flinty grain is made into macaroni, spaghetti, vermicelli, etc.

SWEETS



One of the chief processes involved in the milling and preparation of wheat is sifting. The hard grains retained in the bolting (sifting) machine after the fine flour has been passed through are marketed as semolina, a popular and nourishing dessert.

BISCUITS, CAKES



Soft, white types of wheat, such as those widely grown in Australia, are highly prized for their colour and suitability for biscuit manufacture. Wheat flour is also used in the baking of very fine cakes.

FEEDING LIVESTOCK



Wheat and the by-products produced in milling are often used for the feeding of livestock, especially poultry. During the later war years, the U.S. fed several hundred millions of bushels of wheat yearly to livestock. One variety is specially sown in Australia to provide a hay crop.

STARCH



Starch is an extremely important by-product of wheat. The ancient Chinese used it for sizing paper; Leonardo da Vinci used it to size the fabric of his flying machine. Today wheat starch is used in the textile, weaving, printing and finishing industries. It is also used by the food industry in the preparation of dietetic foods.

BREAKFAST FOODS

Wheat is, of course, the basis of delicious, nourishing, WEET-BIX. These crisp, crunchy biscuits are made by cooking whole wheat grains until they are soft, pressing them between heavy rollers, moulding them into their familiar biscuit form and, finally, toasting them lightly. Other Sanitarium breakfast cereals made from wheat are Puffed Wheat, Granose, and San-Bran.



Project Sheet!

Let us help you with your project. Write to "Project" Box 11, Papanui, Christchurch, for a free illustrated poster giving you the fascinating history of wheat.

WEET-BIX is one of the delicious Health Foods prepared by
THE SANITARIUM HEALTH FOOD COMPANY, CHRISTCHURCH

— MARAETAI —

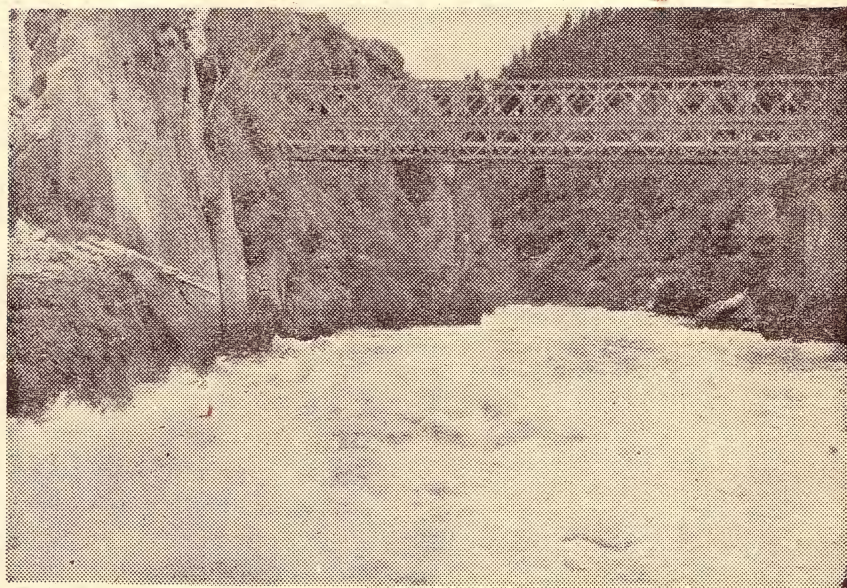
HYDRO-ELECTRIC POWER STATION

(Contributed by the State Hydro-Electric Department)

New Zealand has added another giant hydro station to the network which supplies its towns and its farms and industries with electricity.

THIS is the 180,000 kilowatt station at Maraetai on the Waikato River. It is the third to be built on that river so far, and is one of a chain of ten that is proposed for the future. Two others are going ahead rapidly, one being WHAKAMARU and the other ATIAMURI. It is hoped to bring them into operation within the next two or three years. At that stage half of the links in the proposed chain of ten stations will have been forged and a project that will mean much to the future development of the North Island should be well under way. The stations are built at intervals along the river, each in turn using the power of the river to generate electricity and each sending out its daily contribution of power over the 220,000-volt transmission lines that extend north and south over many miles of mountains and plains.

New Zealanders designed and built the Maraetai station. It stands in a narrow V-shaped gorge, where a con-



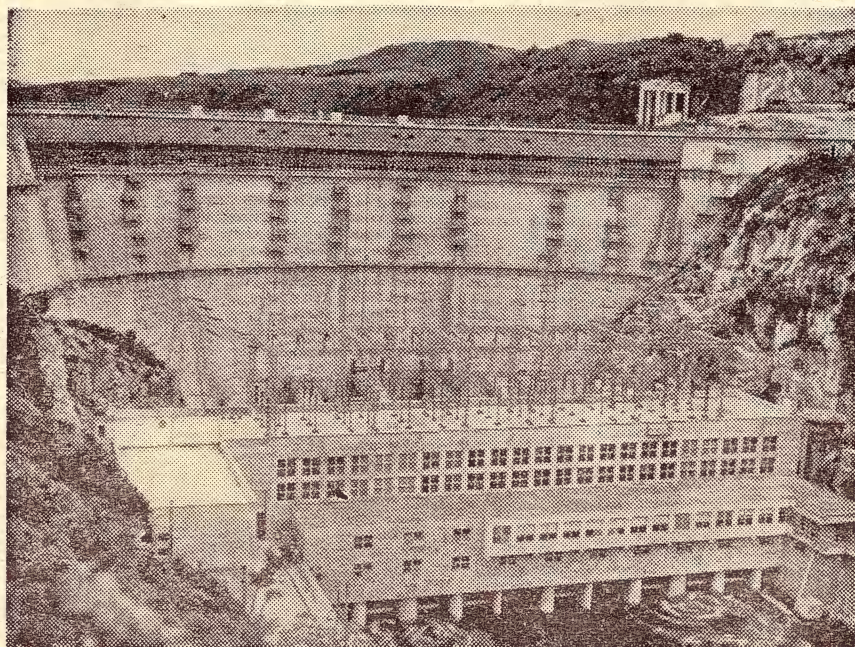
WAIKATO RIVER ON WHICH MARAETAI IS BEING BUILT.

crete dam measuring 280 feet in height and 450 feet round its crest has transformed the river into a lake. The

water stored behind the dam can be controlled and drawn off as it is required through huge steel pipes which lead it to the turbines in the powerhouse. The force of the water pouring through these pipes drives the turbines, which, in revolving at high speed, operate the generators which produce the electricity. The water then passes through a tailrace and resumes its passage down the river.

Because the rock in the Maraetai gorge is of volcanic origin it had to be strengthened so that it would support the great weight of the dam and powerhouse that now stands there. A solid foundation was all important. It also had to be watertight to prevent the river forcing its way under the dam foundations and around the abutments that bind it into the walls of the gorge. The engineers achieved their objective by drilling thousands of deep holes into the countryside. Into these they forced cement, which sealed cracks in the rock and bound it solidly together. This strengthened rock extends 1000 feet on either side of the dam and reaches 200 feet below its deepest foundations.

After they had strengthened the rock the engineers still had a big problem ahead of them, for obviously they could not build the dam in the

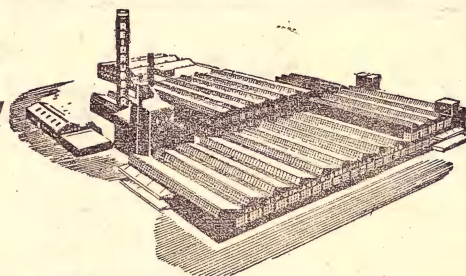


MARAETAI POWER STATION SHOWING DAM AND POWER HOUSE.

(Continued on page 38)

Send your competition entry to the address given for your State on page 4. Send it before 15th October.

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 Whose PRODUCTS are renowned
 For long-lasting quality—
 The best to be found . . .



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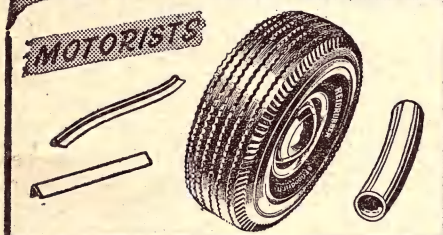


FOR YOUR PROJECT

Get excellent marks for your project. Write for Reidrubber's illustrated picture book in colour—to show you how rubber products are made—to make your project easy. For your free copy, write soon to the address below.

BEST BY TEST

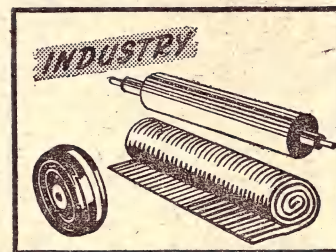
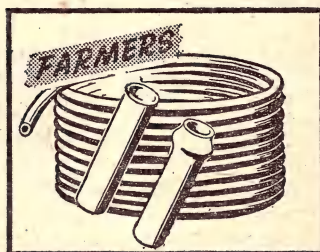
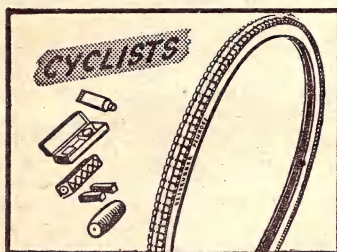
IN ALL WALKS OF LIFE



Does Dad know he gets greater motoring comfort and longer lasting tread with Reidrubber tyres, best in the long run. By the way, Reidrubber makes many other motoring needs, including weather strips for car doors and radiator hoses—all hard wearing.

Trucks need tough tyres that can "take it." That's why so many trucks run on Reidrubber more-mileage tyres. For speedy delivery vans, heavy haulage trucks, timber trucks, Reidrubber makes tyres especially for the job they have to do . . . best by test because they're Reidrubber.

Mum isn't forgotten either. Reidrubber helps for housewives are strong rubber plugs, drain plungers for blocked drains—jar rings for perfect preserving—every kind of tubing. Keep feet dry and put Reidrubber stick-on soles on your shoes. Saves money! . . . and don't forget Reidrubber hot water bottles, warm and cosy on winter nights.



Follow Dad's lead—ride on Reidrubber. More wear, less repairs with Reidrubber Cycle Tyres and Tubes. Repair kits, pedal rubbers, brake blocks, handle-bar grips, are all Reidrubber! Ask for them.

Watch for Reidrubber products on the farm. Milking rubberware is another famous Reidrubber product. Inflations for milking machines, tubing, and floor mats are of special quality.

Reidrubber make sturdy mats for bathrooms, sink benches, doorways—even for bowling greens and motor cars. Be sure Mum buys Reidrubber bath mats, kneel-on mats, and plastic garden hose.

Important! Reidrubber make industrial rubberware—special trolley wheels, machine rollers, printing rollers, many rubber machine parts and rubber matting of every kind.

REID NEW ZEALAND RUBBER MILLS LTD.

FOUNDERS OF THE RUBBER INDUSTRY IN NEW ZEALAND — GREAT SOUTH RD., AUCKLAND.

Butter Buys Bread

(Contributed by the Ministry for Agriculture)

Many centuries ago a nomad was crossing the desert. On his camel he carried a goatskin bag of milk, and on reaching the end of his journey he was astonished to find on opening the goatskin bag that some of the milk had been turned to butter by the continuous movement.

THUS, in a crude form, the dairy industry was born. This first discovery is still the basis of the New Zealand dairy industry, which is acknowledged to be the most modern and efficient industry of its kind in the world. Many centuries divide the invention of the first crude churn from the modern gleaming chromium and teak wood churns of the dairy factories of the Dominion, that make up to 100 boxes of butter (2½ tons) at a churning.

What a wealth and variety of wholesome food come to our meal tables from the dairy farm! Butter, cheese, milk, cream and powdered milk all come to us from the sleek-skinned, gentle cow grazing the lush pastures of New Zealand.

But it is not only the foods that we eat and drink each day that are so important to us. Our country has almost one cow for each person, that is, nearly 2,000,000 cows. All these cows give far more milk than we could ever drink or use in the form of butter, cheese, tinned milk, or even ice cream! So all these good nourishing foods such as butter, cheese and milk powder that cannot be eaten in New Zealand are loaded into ships and sent to our kinsfolk in Britain. In the Old Country the people are so busy in the shipyards, factories and mills that they produce only about half the food they need. Our butter and cheese are sold in Britain and the money is used to buy motor-cars, bicycles, pretty cottons for making dresses, refrigerators for making ice cream, and all the things that are not made in New Zealand.

The keeping of cows and the making of butter and cheese are New Zealand's second largest industry. It may sound funny, but it is true to say that here in New Zealand we live on grass. We don't eat the grass ourselves, of course, but the animals eat the grass and all our wealth comes from animals, whether it be dairy produce, meat or wool. Our country is fortunate in having ample rain and sunshine spread well throughout the



BEVERLEY LIKES ANIMALS . . . THESE CALVES LIKE HER.

year, and this is why the grass will feed so many animals.

Much of New Zealand's success in the dairy industry is due to our forefathers, who brought the best breeds of cattle from the Old Country. After felling the native bush, the pioneers sowed the best grasses then known and added to them new strains of grass that were found as time went by. Since the early days the breeds of dairy cattle have been improved and the quality of grass has risen so that New Zealand is now the leading dairy country of the world. Experts come here from many other countries to study our methods of managing dairy herds and go away with much useful knowledge.

The most important dairying areas are the Waikato, Northland, Taranaki and the Bay of Plenty. In these places the rainfall is fairly high and it is spread well over the year. So if it is raining when you want to go out to play, don't think too badly of the weather; remember that it means that more grass will grow, and somewhere in the world children will get more food.

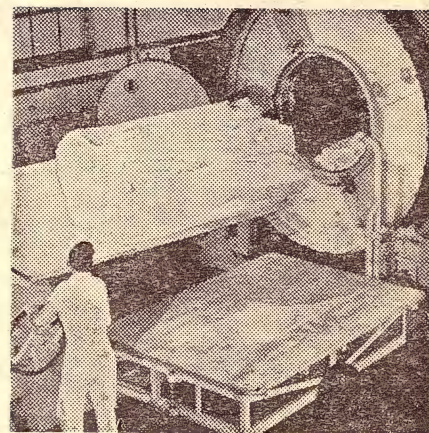
There are two kinds of dairy farm. One kind supplies milk and cream to nearby towns and cities and is called a town supply farm. It must, of course, keep up the supply all the year round. The milk usually goes by lorry to a milk treatment station for pasteurising and bottling before delivery to homes. Some of the big cities, such as Wellington, use large stainless steel road tankers to carry the thou-

sands of gallons of milk required daily for city homes, schools and hospitals.

The other kind of dairy farm, which is much more numerous, produces milk which is made into butter or cheese by a dairy factory, mostly for export. The typical dairy farm has between 30 and 50 cows and 80 to 100 acres of land. The farm is usually owned by the farmer himself, who lives there in his own house. He is usually helped in the milking and other chores by his wife, and his children may carry out small but important tasks on the farm.

The dairy farmer who produces for a butter factory usually separates his

(Continued on page 38)



ONE TON OF BUTTER.

WRITE TO THE FIRMS ADVERTISING FOR FURTHER INFORMATION TO ASSIST YOU WITH YOUR ESSAY OR PROJECT. THEY WILL BE PLEASED TO HELP YOU.

S

stands for Service
And Self Help, we know.
There's service AT SELF HELP
Wherever you go.



600 Years of Grocery Service



In the early days of Britain when all the people were farmers or fishermen there was no need for food-sellers of any kind. But later a division of labour came about and men began to specialise in various skilled crafts such as weaving or carpentry. They became too busy to grow their own food and bartered or exchanged their handiwork for the foods the farmers produced. Gradually the market day came into existence . . . the day when all those interested came to barter their products for others they wanted. Spice sellers made their way from market to market and their rough stalls were the first shops.



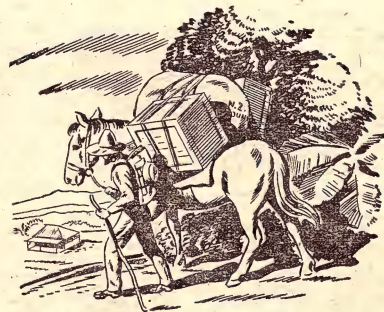
In time, the various specialists banded themselves into Guilds to foster and protect their trades and crafts.

In 1345 the pepperers and the spice sellers joined forces to found the Fraternity of St. Anthony or the Grocers' Guild. The word "grocer" originally

meant one who deals in "grosses," or as we know it today "gross"—twelve dozen.

The Grocers' Guild grew in importance and became responsible for weighing and measuring all imported goods. Today the Fraternity still exists but mainly concerns itself with trade education and training. In New Zealand the first grocery shops were primitive general stores. Practically everything came from far-away England and inland transport in New Zealand meant arduous journeys with pack horses.

As communications developed so did the grocery shops improve. But in 1922 Mr. Ben Sutherland opened a new kind of shop and called it Self Help. He was bent on reducing the price of groceries and introduced novel means to do so. He sold only for cash; he asked customers at first to bring their own paper and string; he eliminated deliveries, the cost of which was previously added to the price of goods. So he brought prices down, and the little shop flourished.



So did the idea, and before long Self Help began to open other shops and spread throughout New Zealand. Today there are over 200 shops throughout the country . . . modern, well-stocked establishments who still make a feature of low-priced groceries but in addition set high standards of hygiene, service, freshness and quality in their goods. At the Self Help shop, every boy and girl can be assured of being served in turn with the best quality goods at the lowest possible price.

It's a far cry from the old-time market to the modern Self Help shop. But it is fascinating to think that Self Help is the final link in a chain of service that stretches back 600 years.



SELF HELP

THE NATION'S GROCER

To help you in preparing your project, write to "Uncle Dick," C/o Self Help, P.O. Box 193, Wellington, for an interesting booklet on the History of the Grocer.

NEW ZEALAND'S GOLDEN FLEECE

(Contributed by the Ministry for Agriculture)

Many boys and girls who live on New Zealand sheep farms save motherless lambs by feeding them from a bottle and look after them until they are old enough to graze.

THESE children may say, "Oh, we're just helping Dad," but they are doing very much more than that; every lamb saved means more meat and wool for food and clothing, not only for the people of New Zealand but for those of many other countries.

Although New Zealand is only a small country, its climate, with plenty of sunshine and rain, is ideal for farming, especially for growing grass and other foods for animals. Our country is so suitable for sheep farming that it is the third highest in the world for producing wool and fifth for number of sheep. Some farmers have only small flocks of up to 200 sheep, but most of them have many more than that. The biggest sheep stations may have more than 20,000 sheep spread over large blocks of land.

With a total of over 33 million sheep on the thousands of farms throughout New Zealand—more than half our land is used for sheep farming, and our sheep grow much more wool than is required for our own use.

Most of our wool is sold to Britain and the money is used to buy machinery, motor cars and trucks, farm tractors, trains and aeroplanes, and many of the articles we wear or use which are not made in New Zealand.

Your teachers have probably told you about Captain James Cook's early voyages to New Zealand, but you may not know that he brought the first sheep to this country. They were two Merinos from Cape Colony, South Africa, which he landed in the Marlborough Province in 1773. They were the last of a small shipment Captain Cook had aboard when his ship left South Africa; the others died during the long voyage. Nobody knows what happened to the two sheep which were the first to eat New Zealand grass; they may have been eaten at a Maori feast.



STUDENTS AT FLOCK HOUSE FARM.

The famous missionary, the Rev. Samuel Marsden, tried to start sheep farming at his mission station in the Bay of Islands. He brought over a few Merinos from New South Wales in 1814, but they, too, died before he could build up a flock.

The first successful New Zealand sheep farmer was John Bell Wright, who had a farm on Mana Island, about 20 miles north of Wellington off the west coast. He brought 102 Merinos from Sydney in 1834. During the next year he sent a few bags of wool for sale in Sydney, the first wool exported from New Zealand.

Soon after the early settlers began to take up land, sheep stations were set up in Canterbury and Wellington and later in other districts. There were no roads or bridges, and driving the sheep hundreds of miles to the high country stations and fording wide, swift rivers, such as those on the Canterbury Plains, meant hard and sometimes risky work for the drovers. Most of the early drovers and musterers were Scots and English shepherds. You will find some interesting stories about them in books on the high country sheep runs.

The first sheep were Merinos, but the wetter climate of parts of the North Island did not suit them as well as many districts in the South Island, where they are still bred for the high country runs.

Farmers have always tried to improve the quality of their wool and



SHEEP MUSTERING . . . MARLBOROUGH.

meat. Throughout the years this has been done by importing sheep of various English breeds and by cross-breeding. Improved pastures and other feed crops have also helped to raise high-quality flocks.

When the meat freezing process was invented New Zealand farmers could then send lamb and mutton to England. The first frozen meat cargo was shipped from Port Chalmers in 1882. New Zealand farmers then bred sheep for meat as well as for wool and the frozen meat industry grew rapidly.

Romney sheep are now the chief breed throughout New Zealand, but half-bred and Merino are produced in Marlborough and half-bred and Corriedale in Canterbury. Many experiments by research officers of the Department of Agriculture and advice by field officers who visit the farms have helped farmers to improve their pastures and flocks.

New Zealand sheep farms are of different types. Some are on high-country stations where sudden snowstorms may mean heavy losses if their sheep are not rescued. Many thousands of acres are used for farms on lower hill country and on fattening farms fat lambs and sheep are bred chiefly for their meat. On intermediate farms there may be both sheep flocks and dairy herds. There are not many stud farms but they produce high quality rams which help to keep up the standard of New Zealand's sheep.

(Continued on page 38)

Don't forget to write to the Firms early to help you with your project.

T stands for the toughness
of a **MULTIWALL PAPER BAG**.
With Kraft paper now made at Kinleith
supply will never lag.



* from **PINE to PAPER**
to **PACKAGE**

The pioneer spirit of our forefathers still survives in New Zealand. This is shown by the enterprise of N.Z. Forest Products Ltd., who have just built the first Mills in New Zealand for making chemical pulp and Kraft paper. Some £7,000,000 has been spent clearing over 100 acres in the heart of their vast pine forests, and in building the Mills, buying machinery and putting up houses for the workers. This vast new industry is situated at Kinleith and the name Kinleith will soon be known far and wide. Kinleith Pulp for making newsprint is already being shipped to Australia, and the tough brown paper made at Kinleith is called Kinleith Kraft. Everybody will soon be able to use all the wrapping and packing papers they need without sending our hard-earned money out of New Zealand to buy them.

And the makers of Kinleith Kraft paper, N.Z. Forest Products Ltd., will use thousands of miles of their own paper to make the world-famous Bates Multiwall Paper Bags at their bag factory at Auckland.

Bates Multiwall Paper Bags are now true New Zealanders, from start to finish. The pine tree is turned into pulp, the pulp into paper and the paper into the finished package. Bates Multiwall Paper Bags are extremely strong and very handy to carry and stack. Cement, fertiliser or foodstuffs in the bag cannot leak out; dust, dirt and damp cannot get in. And Bates Multiwall Paper Bags are as pure and wholesome as the sweet, fresh-cut forest trees from which they are made.

BATES MULTIWALL PAPER BAGS



KING KRAFT
made entirely from
Kraft Paper to cele-
brate the opening
of the first Kraft
Paper Mill in New
Zealand

What a fascinating subject for your Project: a complete chain of New Zealand industries—forestry, pulp, paper and package-making—built up by the foresight and enterprise of one firm, N.Z. Forest Products Ltd., so that our unlimited supplies of Pine could be put to good use.

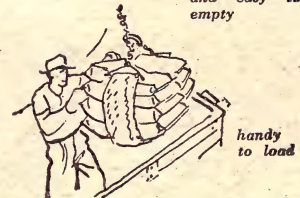
Write to "King Kraft," at the address below, for helpful and interesting material to help you with your project entry.

N.Z. FOREST PRODUCTS LTD.

(Multiwall Division) Penrose, Auckland.



Bates Multiwall Paper
Bags are quick, clean
and easy to
empty



handy
to load



simple to
stack and
carry.

NEW ZEALAND'S GOLDEN FLEECE

(Continued from page 36)

Most of the wool grown in New Zealand is sold at auction sales by the woolbrokers, but some farmers sell direct to the English market, while others sell to country woolbuyers. Before the auctions in the main centres the wool bales are opened in the brokers' stores for the buyers to inspect the wool. They then know what price they should offer. Buyers from all over the world attend the wool sales, which are usually held in a large building such as a town hall or a theatre. The sharp, loud bids and the vigorous gestures of buyers trying to catch the eye of the auctioneer make an exciting scene.

Many men work hard, long hours before the wool reaches the stores. Shepherds with their dogs on the high country runs covering thousands of acres may be several weeks rounding up the sheep and driving them down to the home yards for shearing. The shearers work in gangs and go from station to station to shear the thousands of sheep which await them. On many of the larger farms the wool is graded by a wool classer. From the bins the wool is pressed into packs which are marked with the owner's brand, bale number, and description of wool. After the wool sales the bales are re-packed for delivery to local woollen mills or for shipment overseas.

Our woollen mills are noted for the fine goods they produce and our travelling rugs and blankets are world famous. Our mills produce everything from knitting wool and clothing to carpets and furnishing fabrics.

You may take your football jersey or "gym" frock for granted, but should spare a thought for the farmers, musterers, shearers, woolshed hands, truck or train drivers, wool buyers, and woollen mill employees who have all helped in the various stages necessary before the garments reached the shop counter.

CYCLISTS! BEWARE!

(Continued from page 30)

the driver is in the wrong, this is small consolation for having one's front teeth knocked out. It pays to slow down and be ready to stop at all intersections.

There are other causes of accidents to cyclists who have been caught napping. Keep alert! Be prepared to make an emergency stop, both in the town, and in the country. And above all, keep your cycle safe to ride. A weak brake, a loose head, or a slack chain can cause disaster.

Remember that your cycling habits will largely determine what kind of motorist you will become later on. Practise the good ones as much as you can, and eliminate the bad ones before they eliminate you.

MARAETAI

(Continued from page 32)

bed of the river, without diverting the water. They did this by building a tunnel 1700 feet long and 25 feet in diameter. This tapped the river above the site of the dam and led it away from areas where men were working, then brought the river back on to its course downstream. When the dam was built, the upstream entrance to the tunnel was closed, the river then banking up to form the lake that is there today.

The construction of the station has come to be regarded as a classic among civil engineering feats in New Zealand, and Maraetai has already made a big contribution to the improved power supply position in the North Island, which is now free from restriction on the consumption of electricity.

BUTTER BUYS BREAD

(Continued from page 34)

cream from the milk and feeds the skimmed milk to pigs. He takes the cream to the farm gate to wait for the lorry to take it to the factory. Much of the work round the farm is done by machinery, and electricity is used to operate milking and separating machines, to light the milking sheds when work begins early on dark mornings, to heat water for cleaning the milking plant and utensils, and on some farms, to work the fences that mark off a day's grazing for the herd.

The farmer and his wife work hard to give their children a good start in life, but they also have another important reason for producing as much food as possible. About half the people in the world today do not have enough to eat, and the farmers know that the more food they produce, the more they will be helping to feed the hungry.

GIFTS TO SCHOOLS

Valuable gifts to the amount of £250 can be won by the schools whose pupils participate in the "Alphabet" Project, Essay and Handwriting Competitions, and they will be allotted on the following basis:—

- The number of entries received from the school in proportion to the total attendance.
- The number of different projects and essays submitted. Schools sending in a great variety of these will gain more marks than the school submitting a number on the same product or service, and those sending in equal numbers of projects about each of the projects or services featured

will be awarded special marks. Teachers can help by nominating the project to be done by each contestant.

- The quality of entries received from a school. Marks will be gained if the arrangement of the subject matter shows originality as well as neatness and accuracy.
- The ages of pupils forwarding projects.
- Prizes to schools may be forwarded for good work in any particular competition or may be amalgamated and awarded for a high standard of work in all the competitions.

A MESSAGE TO HEADMASTERS

The firms in the "Alphabet" make available material to assist the children in the preparation of entries for our competitions. This material can be of great assistance, and the children are invited, both in the "Alphabet" rhyme pages and in the details of our

competitions, to write to the firms in question for it.

Pupils are thus stimulated in their research activities, and Social Studies are correlated naturally with English Composition when children feel the need to write and address a business letter, and are then taught to do it.

A MESSAGE TO TEACHERS

We thank you for your co-operation in bringing our competitions to the notice of the children, and for your helpful suggestions in the past.

From the announcements in the "Alphabet," you will see that this year we have decided to allot £500 in prizes — 50 per cent. to competitors and 50 per cent. to schools.

We realise that the children will consult you with regard to their entries, and we are glad to show our appreciation by making this money available for libraries and other facilities.

Please do not make any preliminary selection of entries. We will reimburse you on application for expenses incurred in sending them all on to us.

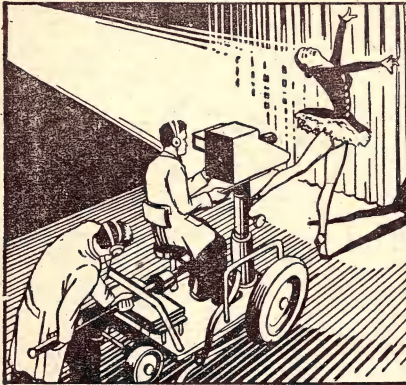
GIRLS AND BOYS:

Prepare an entry in our competitions now, and send it to the "New Zealand Trades Alphabet," Box 2374, Wellington, any time before the 15th of October.

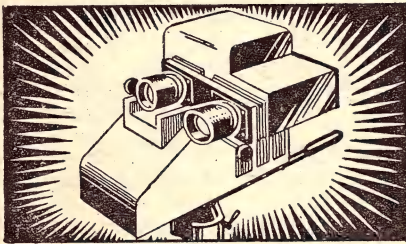
U is for *ULTIMATE*
Which you'll agree,
Is the leader in *RADIO*
As in future *T.V.*



THE STORY OF TELEVISION . . .



TELEVISION CAMERA TAKING PICTURES



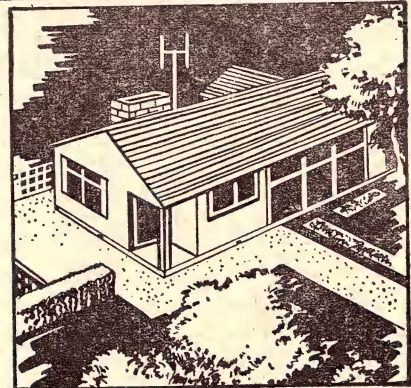
SHOWING THE T.V. CAMERA

Through the years, the popularity of Ultimate products has been unflinching, so it became natural for Radio Limited to present to the public the first New Zealand made home television receiver. This was an Ultimate and was demonstrated first at the Western Springs Exhibition, Auckland, in January, 1952, where hundreds of people saw their first televised picture.

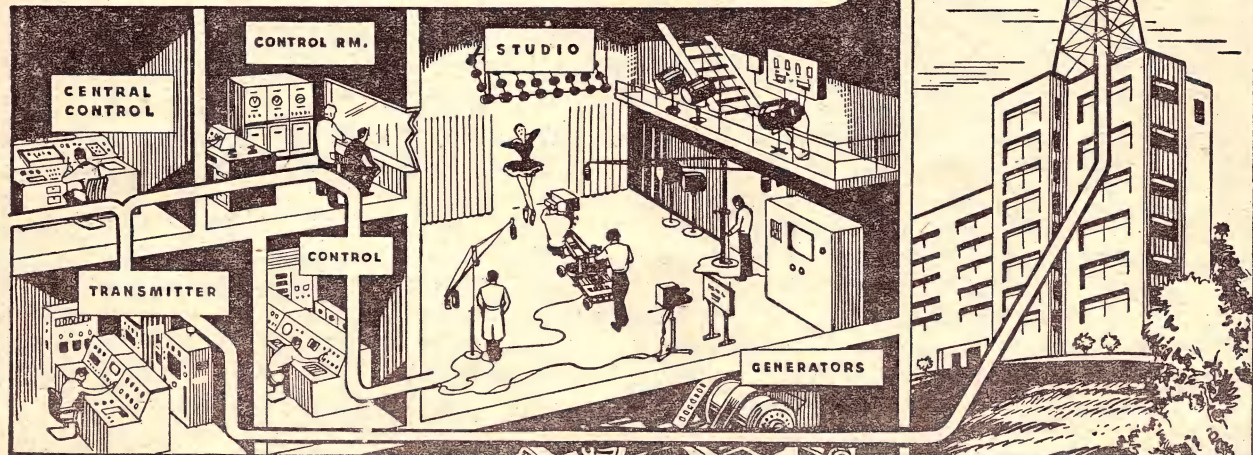
Television is a very complex science that has not been suddenly discovered so much as it has been built up over hundreds of years. It combines important principles from the sciences of heat, light, sound, chemistry, electricity and radio, though strictly speaking it is a further step in radio development.

Though television stems from radio, and has as one half of its entertainment the sounds associated with the picture being transmitted, the sound on T.V. cannot be picked up on an ordinary radio such as we have at home. The sound is transmitted at a different frequency to the present shortwave and broadcast programme, so we will always need our radio sets as a separate entertainment.

Radio Limited, New Zealand's oldest established radio manufacturing firm, produced its first radio in 1923. In 1929, Admiral Byrd had with him on his trip to the South Pole Mr. R. J. Orbell, B.E., the Ultimate radio engineer who took, as part of the communications equipment for the expedition, an Ultimate all-wave receiver. This was, of course, a battery set, and, though 25 years have passed, the set still functions.



TELEVISION IN HOME



A TELEVISION BROADCAST WITH THE TRANSMITTING AERIALS ON THE RIGHT

RADIO (1936) LTD.

6-14 QUAY STREET, AUCKLAND

FREE NEW BOOKLET on Radio & Television
to help you with your essay or project.
Send your name and address to: Dept. "L,"
Radio (1936) Ltd., Box 1166, Auckland.



*stands for VACUUM
and it's right to assume
that the best you can buy
are MOBILOIL and PLUME!*



Ancient Persians used oil... *in 3000 B.C.!*



The Persians used it in the form of asphaltic pitch for their torches and lighting systems. It came from weathered surface crude (seepage).

But oil never really came into its own until the late 19th Century. Less than 100 years ago it was used only as a lubricant, as a fuel for lamps and as a medicinal oil. Scientists have now learned to split up this "black gold" into innumerable forms, all of invaluable use to modern man.

Today, we value petroleum because of its myriad uses. The most important by-product is petrol. This is used for powering modern transport, agricultural implements, industrial and commercial machines.

From oil we obtain kerosene, invaluable for lighting, heating, cooking, cleaning, refrigeration and incubation.

From oil comes asphalt to pave our roads, to roof our houses, and material to waterproof hundreds of articles. From oil comes wax for candles, waxed paper, and typist's carbon paper. Oil is vital to production of synthetic rubber. Look in the medicine cabinet, look on the dressing table. There we see cold cream, vaseline, hand lotion, lipstick, perfume, hair oil, salves and ointments—all containing petroleum in one form or another.

Look at the floor beneath our feet—linoleum is made with oil—carpet wool is treated with oil before it is woven—oil goes into varnish—wax comes from oil.

Look at our feet. Oil is used in treating leather goods.

Look at our clothing. Oil lubricates the strands of cotton or wool from which it was made. Oil may have helped to dye the cloth. Certainly oil helps remove the stains, when we send garments to a cleaner.

Look around our houses. Oil went into the paint on woodwork or furniture; ink in our newspapers and magazines; plastics in our telephones, cars, and dishes; film in our cameras; sprays that keep away moths and other insects. Some of our food may have been ripened or preserved by oil. Most of it was grown and carried to us with the aid of oil-driven machines.

Food, medicine, clothing, shelter, transport—these things and many more make millions of servants that petroleum provides for our modern civilization.

To help you prepare your essay or project competition entry,
"Petroleum in the World" an informative, illustrated booklet, on the story of oil is
available free on application to—

VACUUM OIL COMPANY (N.Z.) LTD.

Box 391, Wellington.



Example of Ancient Persian statuary.
Altar fires are burning asphaltic pitch.

W stands for WOOL

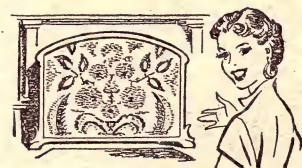
And the best wool to buy
is PATONS & BALDWIN'S
for its quality high

We have told you about our Mills all over the world and the types of yarn which are spun at these various Mills. The wool used in the Mills varies in accordance with the purpose to which the yarn is to be put. For example, coarse New Zealand Crossbred wool is blended into other coarse wools to form our famous Turkey Rug wool. Turkey Rug wool is a woollen spun yarn.

Do you know the test of a good rug wool? Well, when a rug is made, the fibres of wool stick up just like the bristles of a toothbrush, and if your rug is of good quality wool, then when you step on to the bristles and crush them down and then step off, they will spring back into position. Always see that you buy the Best in Rug Wools for long wearing Rugs; the Best always pays.

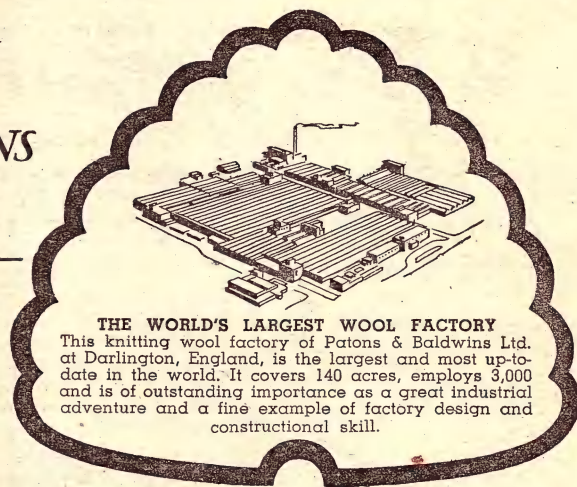
Talking of Rug Wools leads us to think of Tapestries. Did you ever try to do a Tapestry? You can buy Tapestry Canvas with a design stencilled on it in

colours and all you have to do is buy a supply of the coloured Tapestry Wool and a Tapestry needle and fill in the various colours on the stencilled pattern in either diagonal or cross-stitch. Then complete the background colour, which may vary according to the design. Tapestry work is fascinating and soothing and the result of careful attention is a very attractive stool-top or chair seat or fire screen, which is both ornamental and useful in after life.



THE WORLD'S LARGEST WOOL FACTORY

This knitting wool factory of Patons & Baldwins Ltd. at Darlington, England, is the largest and most up-to-date in the world. It covers 140 acres, employs 3,000 and is of outstanding importance as a great industrial adventure and a fine example of factory design and constructional skill.



THERE'S AN INTERESTING CAREER IN WOOL

Wool classing and sorting today is regarded as a science. At Massey College, near Palmerston North, young men are trained in this exacting profession so that woolbuyer and farmer alike may benefit from a better presentation of the product.



USEFUL INFORMATION AND HINTS FOR YOUNG KNITTERS

ANGORA WOOLS are spun by Patons and Baldwins from the fur of the Angora Rabbit, blended with Botany wools from Australia. Patons Fuzzy Wuzzy knits up like a 3-ply—most shades have White fur on a coloured base.

BOTANY WOOL comes from pure-bred Merino sheep—a type originally Spanish, for which Australia is now world famous. Because they are so soft and fine, Botanies are very suitable for Baby things, underwear and women's fashions. Patons Beehive Fingering in 2, 3 and 4-ply and Beehive Baby are Classic Botany wools.

BOUCLET WOOL is a yarn with a crinkle in it and, when knitted into a frock or costume, is the best wearing and most attractive that one can get. Beehive Bouclet is 100 per cent wool and makes delightful suits and dresses.

BRUSHING. Fabrics knitted to a firm tension from certain yarns in stitch (k1. p1.) can be brushed gently with a wire brush or by a machine, and the fibres of the wool are raised to form a pile. This gives a delightful finish to a pram rug or gloves or scarf, and Beehive Double Knitting is an excellent wool for this type of garment.

BUYING WOOL. When buying wool always buy sufficient for your garment at one time, from one blend as the quality and colour may vary from blend to blend. A blend of wool is a mixture of various kinds of wool put together to form a special type of yarn and, being animal fibres, are likely to vary ever so slightly from time to time. Always buy one blend and the blend number is always on the packet beside the colour number on Beehive wools.

CREPE WOOL is a special type of wool, spun and twisted almost like a spiral to give a clean, crisp surface. Beehive Crepe wool is delightful for summer suits, dresses, skirts and fashion wear.

WHAT IS A GAUGE? A Knitting Needle can be thick or thin but must be strong enough to carry the weight of the fabric and knit it into a neat, clean stitch. You would use a finer needle for a 2-ply yarn than for a 4-ply or Double Knitting. The Gauge is the measure of the size of needles and no Knitter can ever afford to be without one.

To help you in preparing for your competition entries, write for further information to—

PATONS & BALDWIN'S LTD.

P.O. BOX 1441, WELLINGTON, C.1

Let's Make a Diorama

YOU have all heard of a panorama—a very wide or long picture showing a continuous scene or an unbroken view of a countryside. A diorama is more or less the opposite. It is a small compact artificial view—for our purpose contained in a box and made up of small models so lighted as to give the effect of reality.

REQUIREMENTS

Box or similar cardboard container, complete with lid.
 Papier-mache or plasticine.
 Cellophane.
 Chalks or paints.
 Cut-out pictures of trees, people, houses, etc.

PREPARATION

1. **THE LID:** A hole about 4 inches square must be cut out in the lid to admit light. Cover this hole with some transparent material, such as cellophane.

2. **THE BOX:** The miniature landscape or setting is built within the box. Cut a small peephole as shown in Figure 2 in one end of the box. Make this peephole about 1 in. square and 1 in. from the top down the centre line.

On the sides and opposite end of the box draw or paint the trees and sky of the background of your landscape, as shown in Figure 3.

Should you wish to represent water, such as a stream or pond, in your landscape, cut the required shape out of the bottom of the box. Cover this with blue cellophane or glass. If clear glass only is available, paint lightly with blue paint. Figure 4.

3. **THE GROUND:** The hills and valleys of the foreground of the landscape can be built in the box with either plasticine or papier-mache. The latter is best, as it permits the ground to be painted after drying.

To make the papier-mache, tear up into small pieces a fair amount of newspaper, allow to soak for several hours, squeeze to remove water, and then mix with flour or starch paste. Add a little disinfectant to the paste. With this medium, model the contours of the land as shown in Figure 5.



Fig 1

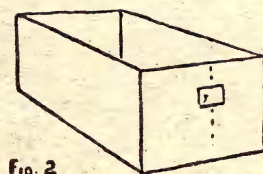


Fig 2

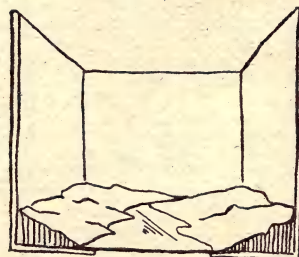


Fig 5

Cellophane

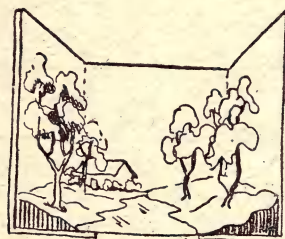


Fig 6

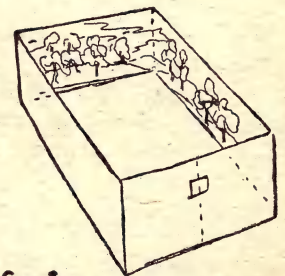


Fig 3

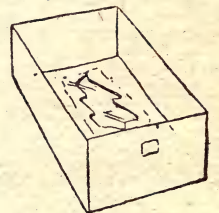


Fig 4

4. **THE LANDSCAPE:** Such additional landscape objects as trees, animals or buildings can be obtained from cut-outs glued to strong card. Leave a tag or "foot" on these cut-outs so that they can be added to the landscape by pushing into the mache before dry.

Trees can be represented by small twigs covered with coloured cotton wool as foliage. Buildings can be modelled in paper or plasticine.

Try modelling figures of animals and people in plasticine.

To complete your diorama, colour the papier-mache "ground" when dry according to the season, replace the lid, and view your efforts through the peephole.

Hold the box so that the light enters through the square hole in the lid.

Experiment with different coloured lights. Coloured papers held over your torch glass will give excellent "stage" lighting.

When you have made a diorama of familiar surroundings, try one from your geography studies.

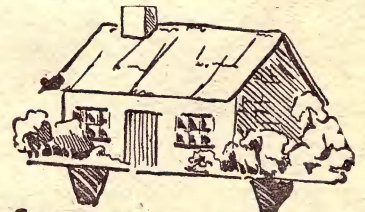
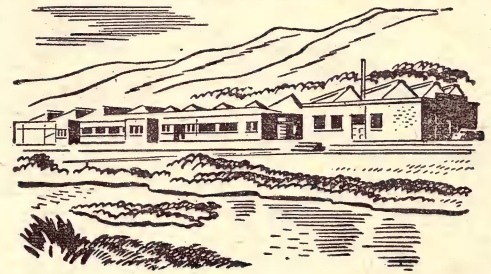


Fig 8

X is for the 'Xcellence
of **BISCUITS GRIFFIN'S** make
They're oven-fresh, delicious,
Like mother used to bake



How **Griffin's**
oven-fresh
biscuits are made
the modern way

FREE for you —
and Free for Mother!

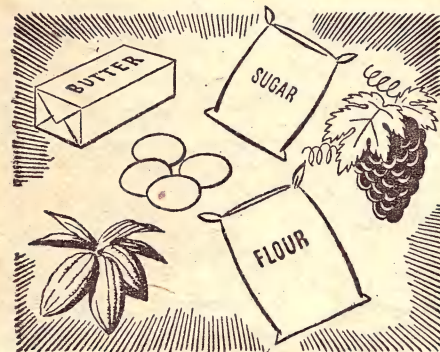
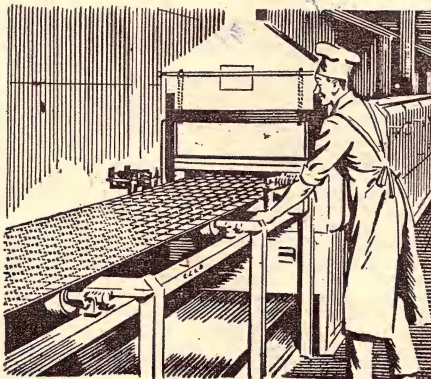
To help in your projects, essays, etc., send to Griffin & Sons Ltd., P.O. Box 76, Lower Hutt, for free illustrated folder giving more interesting information about biscuits and their manufacture. Also ask for free folder for Mother, giving recipes and wonderfully helpful hints on how to use the famous Griffin's Snax biscuits for all occasions.

HOW many biscuits do you eat every day? Well, look how often you eat them—at playtime, lunchtime, after school, suppertime and maybe another one when Mother isn't looking! And you are just one of the two millions of New Zealanders. So you can get some idea of the number of biscuits eaten in New Zealand each week. Of course the next question is—who makes all these biscuits? Well, your Mother, and your friend's Mother bake some, of course—but Griffin's modern factory at Lower Hutt saves Mothers right throughout New Zealand endless time and work by baking great quantities of biscuits every week.



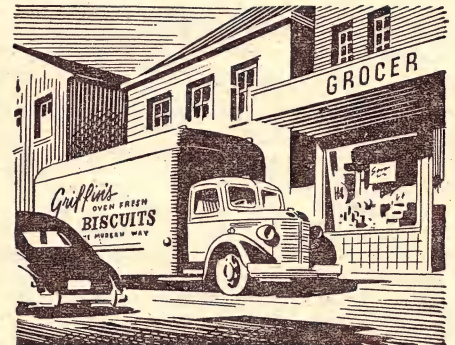
luscious raisins and currants, specially selected flour from sun-ripened wheat, highest quality butter, eggs, baking powder, milk and chocolate—whatever has to be mixed goes into these giant food mixers.

From the mixers the dough is stamped out into biscuit shapes on belt conveyors. These carry them directly into the ovens. Like the mixers, Griffin's marvellous ovens are on a giant scale. They are up to 180 feet long. The biscuits travel



About the only way Griffin's biscuit baking differs from your Mother's is in the quantity. Instead of four ounces of fruit, Griffin's will use half a ton; instead of a pint of milk, Griffin's recipe will call for fifty gallons. And instead of a batch of forty or fifty biscuits, Griffin's will produce many thousands. The quantities are far greater than those Mother uses, but the ingredients are just as carefully weighed out—no "rule of the thumb" methods—everything is scientifically measured to the last ounce. Griffin's are satisfied with only A grade quality, too—the same dairy butter, highest grade eggs, chocolate, fruits, and other tempting wholesome foods you see on your Mother's scales are used at Griffin's. No wonder the concentrated food-value of biscuits was so important to Hillary and Tensing that they took them to the top of Everest!

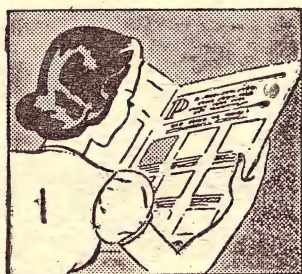
If you could see the Griffin's giant foodmixers you would probably never think that they were magnified versions of your Mother's egg-beater or food-mixer. That, in fact, is what they are. In them literally tons of nourishing, health-promoting ingredients are mixed every day—



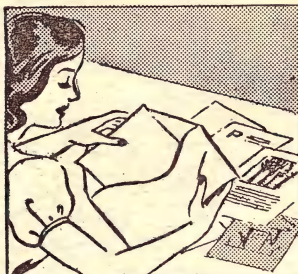
From the ovens, the biscuits travel on the belt conveyors until they have cooled. Then they are packed in their Griffin's tins. Packing, labelling and weighing go on smoothly at top-speed—and forty minutes from the time of mixing, the first batch is ready for dispatch. Fast deliveries are carried out by Griffin's now famous red Vans. Within a few hours Griffin's drivers have the biscuits on their way to your grocer—they certainly are "Oven-Fresh Biscuits." Delicious Griffin's biscuits ready for you—fresh from the ovens of Griffin's modern factory.



At the Griffin's factory there is a special "Laboratory Kitchen." Here new recipes are tried out, old ones improved, ingredients tested, and general research on biscuits and ways of making them is carried on. This modern approach is the keynote of Griffin's garden factory at Lower Hutt.



After studying the picture stories under the rhymes in the Alphabet, I choose the one that interests me most. For example, I might select "Paper" for my project, because I like to know how and where it is made.



I start collecting information and pictures about "Paper" and store them in a large envelope. If I can, I visit a factory where paper is made. Every time I learn something new about "Paper" I write it down and place it in the envelope.



I try to find out HOW, WHEN, WHERE, WHY about my subject, ask myself questions, and raise problems. I write these down clearly and then search for answers. I discuss my problems with others to help me solve them. This, I find most interesting.



I also write to the firm that advertises "Paper" because I know they will be pleased to help me. They send me illustrated books and samples. In this way I obtain valuable information and new pictures.

SENIOR PROJECT QUEST

FOR PUPILS 12 YEARS OF AGE AND OVER

Here is your chance to take an active part in your own education, to advance your knowledge of Social Studies, educate yourself in your country's primary and secondary industries, to win a prize, and help your school to win a gift.

A Senior Project is done in an exercise or drawing book, and presents an illustrated story of one of the products described in the Alphabet on a page which has a rhyme at the top, or of a product on one of the covers. More credit is given for your own individual work than for the mere pasting up of cut-outs and copying from literature supplied by the firm. Use cut-outs and pictures, but also do some of your own drawings, maps, paintings, graphs and sketches for illustrations.

In gathering your facts, study the literature you obtained from the firm, school reference books and text books. Make notes, ask questions (how, when, where, why?), discuss your subjects with your teacher, parents and friends; clip pictures and cuttings from magazines, newspapers; if possible, visit a factory where the product is made.

When you have gathered sufficient information, you must then organise it. Arrange your pictures, samples, etc., in the best possible way so that they tell a connected and interesting story from beginning to end. Then write your story IN YOUR OWN WORDS on the right-hand pages and paste down your pictures on the left-hand pages. Study the plan given under the illustrations. If you copy passages from books, place them in inverted commas. You may also give an account in the first person of a discussion with a friend, or write a short play or the script for a puppet show about your entry.

PRIZES

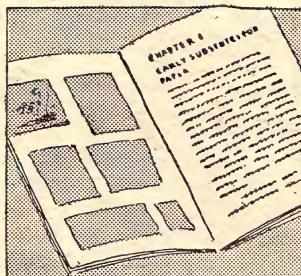
Valuable prizes amounting to £120 are given to winners in the Senior and Junior Project competitions—£70 for Senior and £50 for Junior Projects.

Two prizes of £5 each, five of £2 each, 10 of £1 each, 74 of 10/- each; also three of £1 each for the most artistic book covers.



Then on page 3 I set out the chapter headings of my story as follows:—

CHAPTER	PAGE
1. Early Substitutes for Paper	3
2. The History of Paper	7
3. The First Printing Press	11
4. Paper Manufacture Today	15
5. A World Without Paper	19



Then I begin my first chapter. I am careful to write my story only on the right-hand pages of the book. When I have finished writing I paste my pictures and samples on the left-hand pages to illustrate my story.



Next, I take some pictures, coloured paper, samples and my crayons and paints, and design a novel and interesting cover for my Project Book.



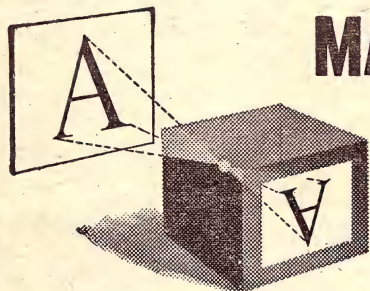
Then I ask my Teacher to sign my entry. I wrap it carefully, put the correct stamps on it, and send it to:—

"THE NEW ZEALAND TRADES ALPHABET,
P.O. BOX 2374,
WELLINGTON."

SEE PAGE 4 FOR CONDITIONS AND DETAILS: £500 IN PRIZES

N.B.—The material available from the firms advertising is of great help to you in preparing your essay or project. Write for it early.

Y stands for You
 And the years you'll need light
 To keep your eyes Young
 It's PHILIPS for LIGHT



MAKE YOUR OWN CAMERA OBSCURA

It's easy to make your own camera obscura. All you need is a box made of very thin wood or cardboard which is completely light-proof. Fill in or cover up any tiny spots where light might get in. A good size is about 12" x 12" x 12". Where the lid would normally go, fix a square of frosted glass (or a piece of heavy tracing paper) with adhesive tape. In the centre of the side opposite the glass or paper, get Dad to make a very small hole with a red-hot needle. If

you then put a black cloth over your head and the box — don't cover the pinhole — and look into the glass (with the hole in the box pointed at some well-lighted object), you will see an upside-down image of whatever you are looking at. Indeed, you see exactly what a photographer sees when he peers through the back of his camera. The only difference is that real cameras have special lenses in place of the tiny hole in your box.

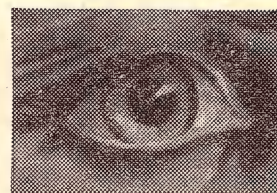
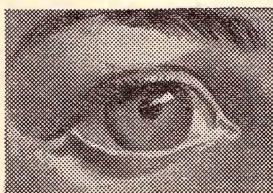


AN EYE WORKS LIKE A CAMERA OBSCURA

As you can see from the drawing, your eye works in exactly the same way as a camera obscura, except that the eye is shaped something like a ball. In the front of the eye is the opening called the pupil, and behind that is a lens. Just as with the camera obscura, the "pictures" that the eye sees are upside

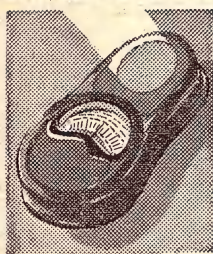
down at the back of the eye. Here, a series of truly remarkable "optical" or "seeing" nerves pass on the pictures to the brain. In the process, the brain translates the upside-down pictures to normal ones . . . otherwise the whole world would seem topsy-turvy.

EYES HAVE AUTOMATIC PUPILS



The nerves at the back of the eye are sensitive to light, so nature has provided the eye with a pupil which expands and contracts automatically to control the amount of light that penetrates to the optic nerves. You can see this happening by looking at your own eyes in a mirror or looking at the eyes of a

friend. You'll notice that out-of-doors in strong sunlight the pupils are very tiny, while inside, where the room is dark, the pupils are nearly as big as the iris of the eye itself. In fact, the pupil in your eye does exactly the same job as the "aperture" control on Dad's camera.



LIGHT CAN BE MEASURED

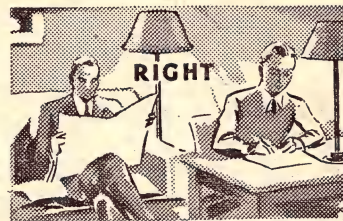
Just as we can measure heat with a thermometer, we can measure light with an instrument known as a light-meter. Degrees Fahrenheit or Centigrade are the units of practical heat measurement. In the same way, lumens per square foot (sometimes referred to as foot candles) are the units of practical light measurement. A light meter is accordingly marked in "lumens per square foot." On a bright summer's day out-of-doors, you could easily get a reading of 8,000 to 10,000 lumens per square foot. Of course, not nearly as much light as that is required for indoor work but at least 25 lumens per square foot are needed for prolonged reading, yet often you'll see people trying to read under conditions when the light-meter would show only 4 or 5 lumens per square-foot. Obviously that is far too little.



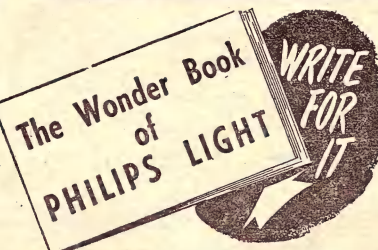
**PHILIPS ELECTRICAL
INDUSTRIES
OF NEW ZEALAND LTD.**

LIGHT DEPT., BOX 2097, WELLINGTON.

PROTECT YOUR EYES WITH CORRECT LIGHT



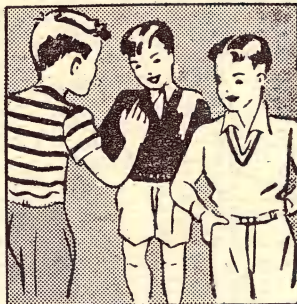
As we've said before, the pupils in eyes grow larger or smaller according to the amount of light. You overwork your eyes, for instance, if you work under a strong lamp with the rest of the room in darkness. To prevent undue strain on the eyes, the rest of the room should be illuminated to roughly one-quarter the value of the light under which you are working. Use a 100 watt Philips lamp in a central fitting for general illumination and at least a 100 watt Philips lamp over your desk for homework (or beside the chair for Mother or Father for sewing or reading). Remember, to keep your eyes healthy, to save eye-strain, to avoid the headaches that might result, always be sure that there is not only ample light on whatever you're doing but that there is adequate light distributed throughout the rest of the room.



Philips have prepared a special illustrated book, "The Wonder Book of PHILIPS LIGHT". You'll find it crammed with interesting facts, exciting experiments and examples that will help you understand light and its technical uses. Write to Philips Electrical Industries of New Zealand Limited, Light Dept., Box 2097, G.P.O. Wellington, giving your name and address and a copy, free of charge, will be posted to you.



The first thing I do is to turn over the pages of the Alphabet and choose a product on a page under a rhyme or one of the covers. I may choose "Paper" because it is interesting to me.



By asking questions of my teacher, parents and friends, I find that paper is made from trees, where the trees are grown, and what happens to these before they come out of the giant machines as rolls of paper.



I also write to the firm that makes paper, for picture books and samples, and I read books in the school library, and other books that help me with my subject.



I make notes from what I read, cut pictures out of magazines and newspapers. Sometimes I make drawings and sketches to paste on my project entry.



Next, I get a sheet of strong paper or cardboard, 30in. x 36in. On this I arrange my pictures, drawings, samples, moving them around to get the best results. I leave a space under each picture to write my story.

JUNIOR PROJECT

FOR PUPILS UNDER 12 YEARS OF AGE

Do your project on a sheet of brown paper or cardboard about 36in. x 30in. First of all, decide on one of the products that is described on a page that has a rhyme at the top, or on a product on one of the covers. Your project sheet should consist of illustrations and your own written story. More credit is given for your own individual work than for the mere pasting up of cut-outs, and copying from the literature supplied by the firms. Use cut-outs and pictures, but also do some of your own drawings, maps, paintings, graphs and sketches for illustrations.

Gather as many useful facts and pictures as you can. Write to the firm for its literature, read books from your library, make notes, and talk about your project with your teacher, parents and friends. If possible, visit a factory.

When you are ready, arrange your story and pictures in the best possible way to make it interesting and attractive. Read the illustrated story on this page. It will help you.



I then prepare my project. I paste the pictures in the correct positions, and write my story underneath them.

PRIZES FOR JUNIOR PROJECTS

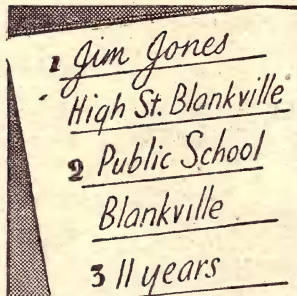
FIVE PRIZES OF £2 EACH.
10 PRIZES OF £1 EACH.

20 PRIZES OF 10/- EACH.
80 PRIZES OF 5/- EACH.

By doing a project you are learning to educate yourself, and you may win a prize yourself and also help your school to receive a gift. Now read how Jim Jones prepares his Junior Project, and this will help you with your own.



I print the name of my project in large letters on top of my entry, and get my teacher to sign it.



On the top right-hand corner I write: 1. My full name and home address. 2. The full name and postal address of my school. 3. My age in years on 15th October, 1954.



Then I wrap my project carefully and address it to:—
THE NEW ZEALAND TRADES
ALPHABET,
BOX 2374, POST OFFICE,
WELLINGTON.



Finally, I place the correct postage on it and post before the 15th October, 1954.

THE ALPHABET

Most educationists stress the fact that education, like charity, should begin at home, and that school work should be based first upon the local environment and the interests of the community, and then extend outwards. It is, however, often difficult to get reliable information about our own national industries and services, and the Trades Alphabet is pleased to be able to supply facts of this nature in an attractive and reliable form.

The Alphabet aims at educating children in the great primary and secondary industries of their country, and at encouraging them

to take an active part in their own education through voluntary effort, initiative and research.

Also, the activities promoted by the Alphabet invite the co-operation of business firms in assisting children in their education. The business world has much to offer the schools, and the outlook of pupils can be broadened by extra-mural contacts. In this way, too, real interests are developed, and the personality of the pupil given a chance to expand.

SEE PAGE 4 FOR CONDITIONS AND DETAILS: £500 IN PRIZES

Z

stands for zest
which SUGAR supplies
The energy food
which best fortifies



A holiday in the tropics—Betty and Ken are going to Fiji



They stay with their Uncle Jack, who is a C.S.R. Field Officer



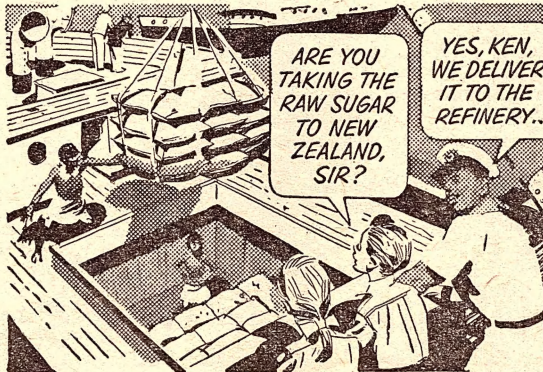
Fijian and Indian farmers grow the cane on small farms



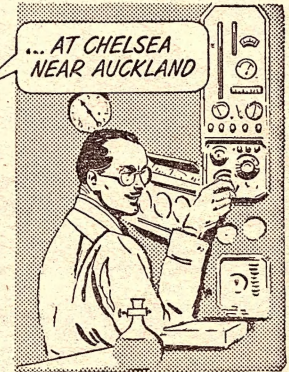
Trains pull the cane to the nearby mills where the sweet juice is crushed out



Raw sugar is made at mills near the canefields



The crude raw sugar goes to New Zealand for refining near the customers who buy it



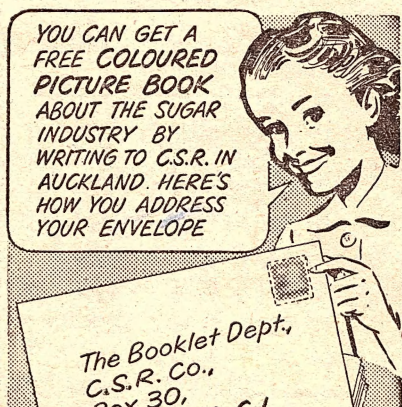
Sugar refining is a very complex process



Mother uses sugar in cooking



Sugar is an energy food



YOU CAN GET A FREE COLOURED PICTURE BOOK ABOUT THE SUGAR INDUSTRY BY WRITING TO C.S.R. IN AUCKLAND. HERE'S HOW YOU ADDRESS YOUR ENVELOPE

The Booklet Dept.,
C.S.R. Co.,
Box 30,
AUCKLAND, C.I.

WRITE FOR YOUR FREE BOOKLET

The C.S.R. Co. has prepared a booklet giving further details of how sugar is grown, milled and refined. It also contains many interesting pictures. You may obtain your copy by writing to the C.S.R. Co. at Auckland.

Address your letter as shown in the illustration.

SERVICE TO TEACHERS

Teachers who write may have a copy of the booklet for each pupil in their classes.

A SUB-JUNIOR PROJECT FOR INFANTS' SCHOOLS

The SUB-JUNIOR COMPOSITE PROJECT is based on the Social Studies Course in the Curriculum for Infants' Schools, and is designed as a combined class effort by Infants' Classes.

It consists of setting out on one or two sheets of brown paper, or chart paper, or cardboard about 36in. by 30in., samples of the pupils' work in composition, drawing, handiwork, etc., directly related to agricultural, industrial and commercial activities described on the pages of the "Alphabet" under the rhymes or on the covers.

SUGGESTIONS TO TEACHERS

1. Following your ordinary routine, choose a theme or focal point for the current class activities. Then look through the "Alphabet" and select from under the rhymes or on the covers those products or industries related to the focal point. It will be found that where a theme such as Our Food, Our Homes, Our Clothing, Comforts, Transport, Lighting, Heating, etc., is chosen there will be quite a number of pages in the "Alphabet" that can be used.
2. Instruct the children in the correct method of writing letters to the addresses given on these pages, asking the firms to send samples of their special literature or material. Select the best letters and ask the children to have them posted to the firms—several letters to each.
3. Arrange for the children to bring the samples received to the school. These could be made subjects for class talks.
4. If convenient, a visit to a local factory might be organised.
5. Keep the best work of pupils each week in composition, drawing and handwork for example.
6. When sufficient work has been collected, a final selection of samples might be made for the project chart. If there are sufficient samples, two or more charts might be prepared. Include samples of work by as many pupils as possible.
7. Place the samples on the sheet or sheets and decide which is the best arrangement. When this has been done, paste or fasten the samples firmly on the chart.
8. Then write or print on the chart:—
 - (a) A Title for the Project.
 - (b) A Title under each piece of work, and the name and age of the pupil who did it.
 - (c) On the top right hand corner the name and postal address of the school, and the Teacher's signature.
9. Send your entries before the 15th October to "The New Zealand Trades Alphabet," Box 2374, Wellington, or deliver it to our office at Nathan's Buildings, Grey Street, Wellington.

GIFTS TO THE SCHOOLS

Awards will be made to the schools that send good Sub-Junior Composite Projects. These awards may be used by the schools to purchase school equipment such as library books or pictures or other equipment for the benefit of all the pupils.

WRITE TO THE FIRMS FOR LITERATURE

Working on the educational principle "We Learn by Doing," the New Zealand Trades Alphabet has been designed to encourage voluntary effort and initiative on the part of the pupil.

We therefore suggest that you write to the firms for the literature that has been prepared specially to assist you in your essay and project work for the competitions. Their addresses appear on the covers, and on the pages where there are rhymes.

COMPETITION NOTES

SAMPLES OR SPECIMENS

If samples or specimens are attached to your project entry, please see that they are firmly fastened to it. Liquids should be placed in non-breakable containers properly sealed.

VERY IMPORTANT

When you write to the firms for their literature to help you with your essay or project, please see that you give your correct postal address in your letter.

RESULTS OF COMPETITIONS

A complete list of the names of the prize-winners will be forwarded to every school from which entries have been received.

PRIZES

Open orders for prizes to competitors, and for gifts to schools, will be forwarded to the schools as soon as possible after the judging of the entries has been completed.

RETURN OF PROJECT

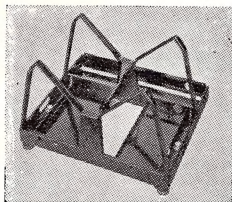
All projects, both, Senior and Junior, that are awarded prizes exceeding five shillings, will be returned to the schools. Other projects will be returned if the competitor makes a request plainly written on the back page or sheet of the project. Essay and writing entries are not returned.

The Story of the BENDIX *AUTOMATIC* Home Washer

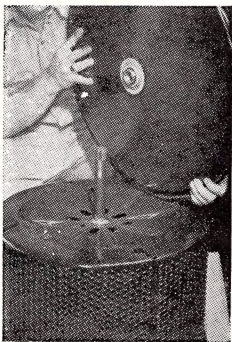


- ★ How it washes
- ★ How it is made

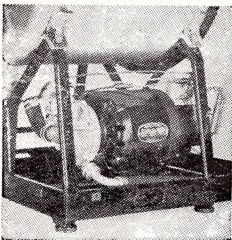
How the BENDIX is made—



It would take almost a book to describe all the manufacturing processes required for the several hundreds of separate parts which go into the making of each BENDIX Automatic Washer. Even to name them all would make a very long list. In the factory these individual parts are built up into six main sub-assemblies of the BENDIX—the base and frame, the tub and its inner revolving cylinder, the motor and its power-transmission system, the electrical equipment and its automatic controller, and the cabinet in which all the operating mechanisms are neatly enclosed.



We have not space here to do more than describe and illustrate how these sub-assemblies are finally incorporated in a single, complete and well-tested automatic washing-unit. In the top illustration you see the first component to be manufactured, namely, the BENDIX frame or chassis (of pressed steel channel, welded for lightness and strength) upon which is mounted cylindrical tub, the motor and transmission, the valves and controls, and finally the outside cabinet. In the illustration above you see the building of the tub around the perforated clothes-cylinder, which, rotating within the tub, carries the clothes through the water 59 times every minute during the washing period and which spins them at high speed during each water-extracting stage, including the final damp-drying.



Now the BENDIX tub, with the clothes cylinder inside it, is fixed in place and the motor, transmission, drain-pump and water-valves are incorporated. The BENDIX is now mechanically complete and able to perform the various operations required (filling or emptying, soaking, washing, rinsing, spinning, drying) and it would perform them efficiently, but if we left it as it is, it would have to be switched into each separate operation by hand. The particular feature for which the BENDIX is especially famous is its wholly automatic operation. Obviously we must now incorporate some device which will cause the machine to do all these things in the right order and for the correct length of time without any manual control.

How the BENDIX washes—

The BENDIX Washer does all that you would do if you had to wash clothes by hand. It fills its tub to the proper level, mixing hot and cold water to obtain exactly the right temperature—really hot for cottons, not much more than warm for woollens and delicate fabrics. It soaks the clothes, then rinses and drains the tub, refills, washes the clothes for whatever time you decide on, drains again, refills, rinses three times, drains, and finally wrings the clothes dampdry and ready for the line.

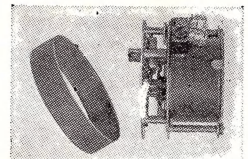
But (once you put the clothes in, set the dials according to the quantity and kind of clothes, switch on and add the soap) the BENDIX does all these things without your help or intervention. The BENDIX, by means of a combination of ingenious mechanisms, all of which are connected to an inbuilt motor, substitutes its own smooth power for your labour. There's no mess, no hard work, no heavy lifting of wet clothes, nothing at all for you to do—you don't even wet your hands... BENDIX brings workless washdays.

What makes the BENDIX so different from all other washers is that it goes through the whole routine of washing, several rinsings and final damp-drying all by itself. Another kind of washer might do some of these things, or even all of them, but it would need you to keep turning taps on and off, pressing switches and moving levers in order to make it do the various operations one after another and in their proper order.

The BENDIX, however, requires neither supervision nor control. It washes, empties, fills, rinses, and dampdries—doing all these things for the right length of time, using the correct amount of water at just the right temperature and all in the right order—without any help from you whatever. Not only that, but it stops altogether when the washing is done.

This is the special feature of the BENDIX Washer—it's entirely automatic. A special controller—a sort of electrical robot brain—directs the whole series of BENDIX operations. You set it—and forget it! No work, no switching, no watching, no waiting—you don't even need to be there. You can go shopping while your BENDIX does the work. When you get back you find the BENDIX drained and switched off... but all the washing done! And perfectly done!

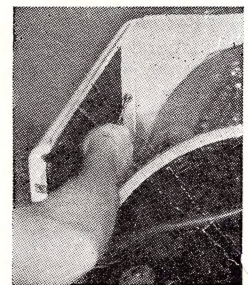
Here is the ingenious electrical controller which makes the BENDIX perform all its duties in the proper order, and each for the proper length of time, without any manual control after switching on.



This automatic controller is quite self-contained and is driven by a miniature electric motor about the size of a pocket-watch. It operates a series of switches in a pre-determined order and for the exactly right length of time needed for each operation of the wash. By setting the dial of this controller or timer, the user is enabled to fix in advance the time for which the BENDIX will soak or wash the clothes. (The nature of the clothes to be washed determines whether the soaking period or washing period should be longer or shorter than normal). When the dial has been set in this way, the controller takes complete charge of the whole cycle of operations and finally switches the BENDIX off.

The next step is to enclose the BENDIX in its cabinet. The panels forming the cabinet are of pressed steel, rust-proof, and enamelled in white. They are so designed as to bolt together in a streamlined form which gives great strength and rigidity as well as a smooth and stylish exterior finish. The connections for hot and cold water and for draining away the soiled washing and rinsing water, and the electrical connections for the supply of power to the motor and other electrical mechanisms, are all positioned at the back of the cabinet out of sight.

Finally, in the illustration below, you see the completed BENDIX. In the centre of its front panel is the water-tight clothes-door with its circular glass window; on top, the soap door. At the top left front, you have two controls—the water rationer which, when pre-set for a small, medium or large wash, meters in exactly the right amount of water, thus saving hot water; and the temperature control which the user similarly pre-sets according to whether a really hot or merely warm wash is required. On the right is the timer dial which the user sets for normal, or longer or normal, or longer or shorter, soaking or washing periods, as the clothes may require. Once the dials are set, the BENDIX does all washing operations automatically, stopping of its own accord when the final damp-drying is completed.



BENDIX *AUTOMATIC* Home Washer

Manufactured under licence by FISHER & PAYKEL LTD., P.O. Box 2172, AUCKLAND.

If you wish to know more about this remarkable BENDIX Automatic Washer write to the manufacturers, who will send you coloured leaflets giving more detailed description of the BENDIX.

***"An apple a day
Keeps the doctor away"
Very true is this old tale
Eat one daily without fail.***



APPLES are good for you.

They're rich in
food essentials... for building
strong bodies
and
sound teeth.



enjoyment
eat an



For
plus health
apple a day.

FOR YOUR PROJECT

apply for our free informative booklet.

**THE NEW ZEALAND APPLE
and PEAR MARKETING BOARD**

P.O. BOX 6334, TE ARO - WELLINGTON

